HE PAPER INDUSTRY
and PAPER WORLD
EDUCATIONAL NEWS MAGAZINE—FEBRUARY 1945

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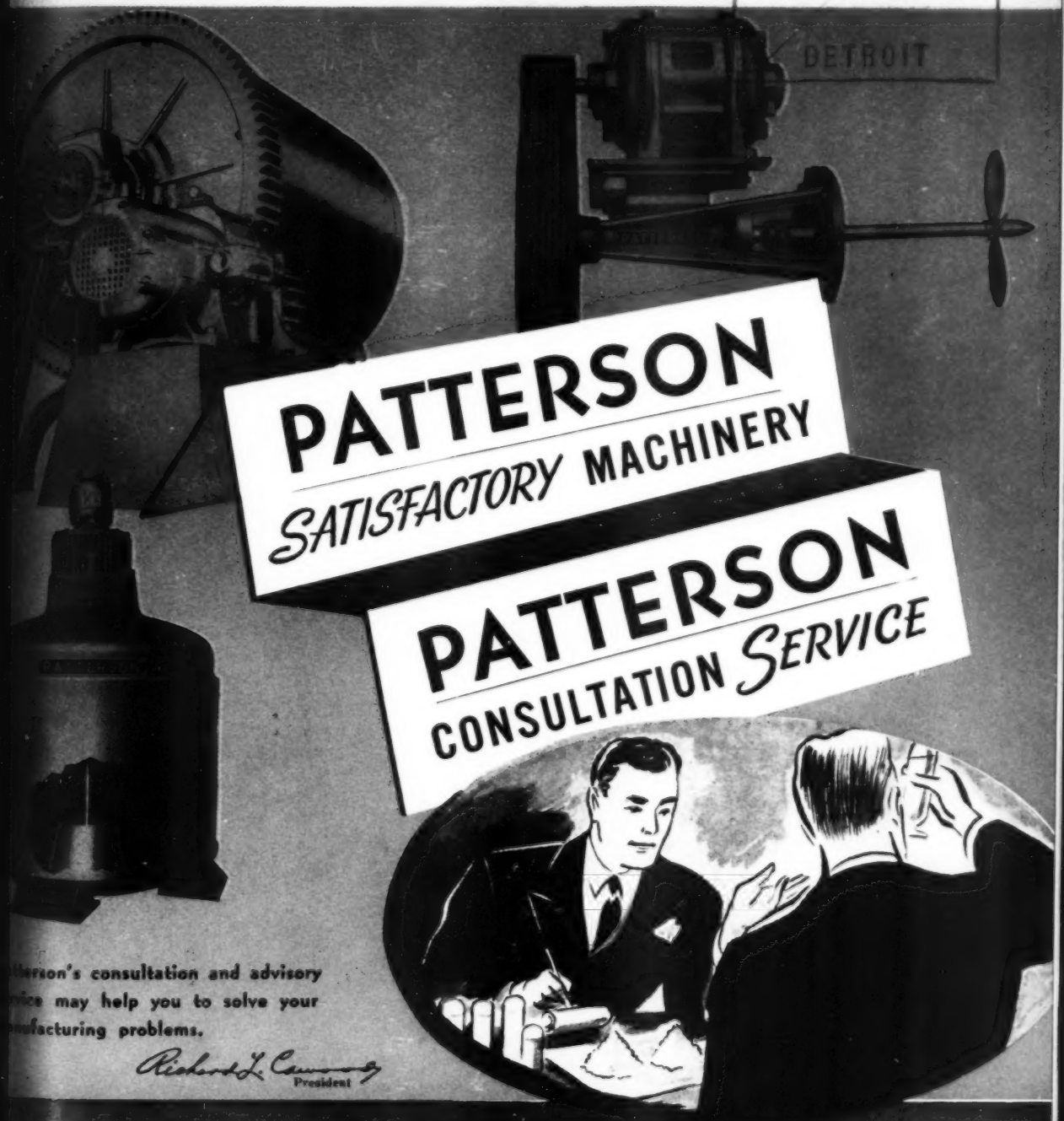
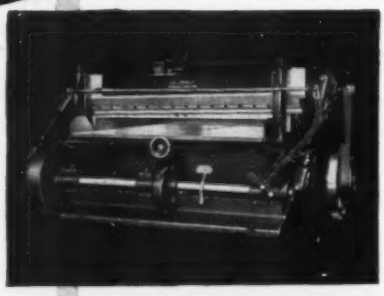


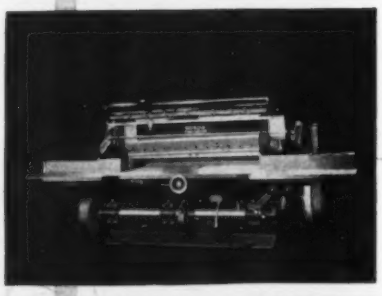
THE PATTERSON FOUNDRY & MACHINE CO.
EAST LIVERPOOL, OHIO. U. S. A.

Confidentially, they hope to start making Seybolds again



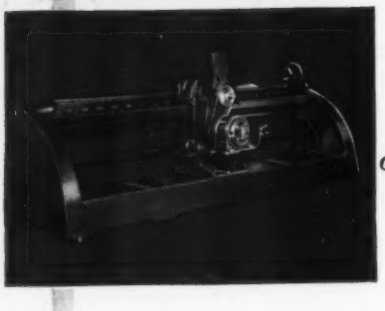
CUTTER

I'm a precision *machine*
Of massive design.
For accuracy—tops!
For speed—super fine!



SPACER

For making a series
Of accurate *cuts*
I'm a time-saving guy
With plenty of guts!



GRINDER

Keen, true edges
That's my trade
With minimum waste
On any straight blade!

Yes, we certainly do *hope* to start making Seybolds again for civilian use. *When* this will be we have no way of knowing. But you can do yourself a lot of good by putting in your reservation order now. Many are doing it. Use the coupon or write.

SEYBOLD
• DIVISION •

Harris-Seybold-Potter Co., 819 Washington St., Dayton, F-7, Ohio

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Please send us your Purchase Proposal form which gives complete details of your Reserve Order plan.

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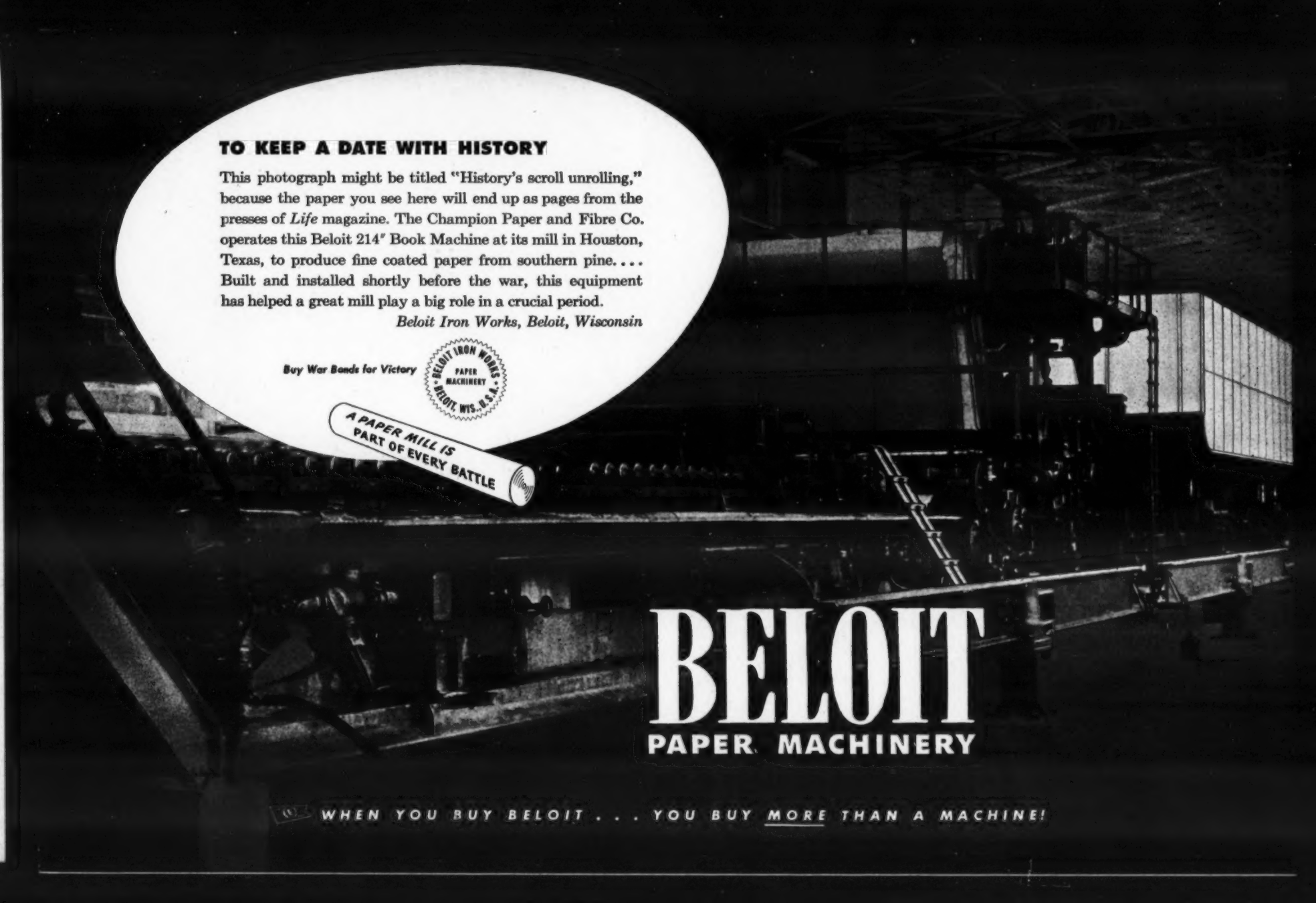
TO KEEP A DATE WITH HISTORY
This photograph might be titled "History's scroll unrolling," because the paper you see here will end up as pages from the presses of *Life* magazine. The Champion Paper and Fibre Co. operates this Beloit 214" Book Machine at its mill in Houston, Texas, to produce fine coated paper from southern pine.... Built and installed shortly before the war, this equipment has helped a great mill play a big role in a crucial period.
Beloit Iron Works, Beloit, Wisconsin
Buy War Bonds for Victory
BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A.
A PAPER MILL IS PART OF EVERY BATTLE
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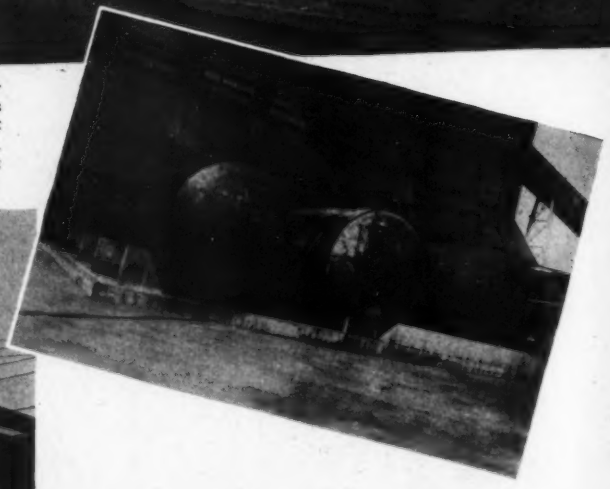
PAPER MACHINERY
WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE!

STEEL PLATE WORK
for the mill that
"Looks Ahead"

Shown here are three examples of steel plate work fabricated in our plants for the paper industry. They were designed and fabricated to meet specific pulp mill requirements. Additional equipment of this type—installed at your mill can help you meet future production schedules.

We have facilities for x-raying and stress-relieving in accordance with paragraph U-68 of the A.S.M.E. Code for Unfired Pressure Vessels. When your mill-expansion program calls for flat-bottom storage tanks, cylindrical tanks, diffusers, sulphate and sulphite digesters, steel smoke stacks and bins, address our nearest office for quotations.

The upper right hand photo shows a 12-ft. diam. x 45-ft. 4-in., sulphate digester (fabricated for a paper mill in the south), emerging from the stress-relieving furnace at our Birmingham plant. At the right are three 12-ft. diam. by 60-ft. black liquor tanks. The three welded-steel salt cake storage bins shown below hold 833 tons each.



Now Is the Time to Increase Your Mill Capacity with Modern Steel Tanks and Steel Plate Work.

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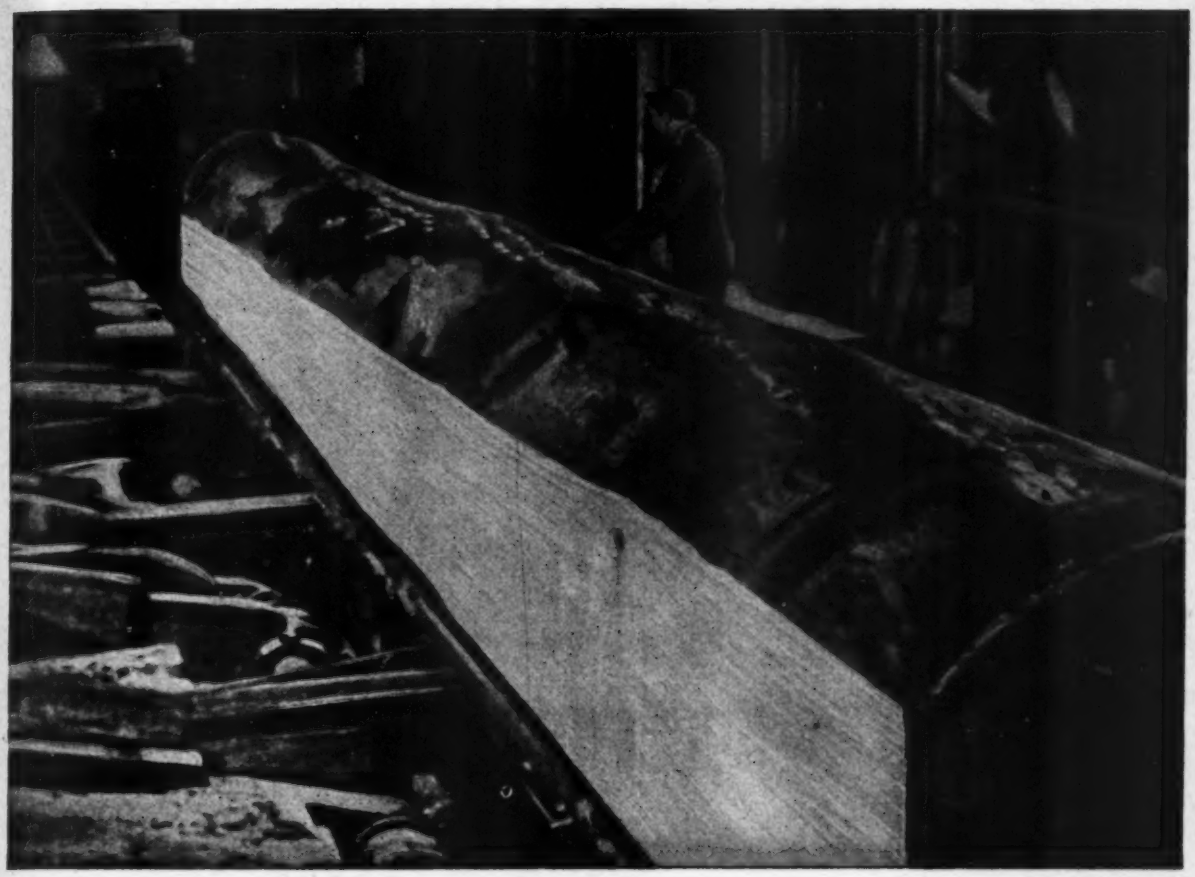

"BIG" SOURCE OF WOOD PULP

WHERE facilities exist for handling them, even giants of the forest — like the 6-ft. diameter log in the picture — are utilized to meet today's unprecedented demand for wood pulp. A 60-ft. band saw slices these great logs into 6-in. thick slabs for easy pulping at the rate of 4000 board feet a minute.

Speedy transformation of timber to pulp to paper depends largely on efficient operation of logging and mill machinery . . . which, in turn, depends on effective lubrication. Operators all along the line get this with Texaco.

Texaco steam cylinder oils, for instance, assure more dependable engine performance. They atomize completely, adhere to cylinder walls and separate rapidly from the exhaust.

Texaco lubricants have proved so effective in service they are definitely preferred in many fields, a few of which are listed at the right.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ *More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.*

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★ *More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.*

★ *More revenue airline miles in the U. S. are flown with Texaco than with any other brand.*

★ *More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.*

TEXACO

TEXACO Lubricants

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THE PAPER INDUSTRY and PAPER WORLD is indexed regularly in "The Industrial Arts Index." An index to each volume is issued annually by the publisher as Section Two of the April number.

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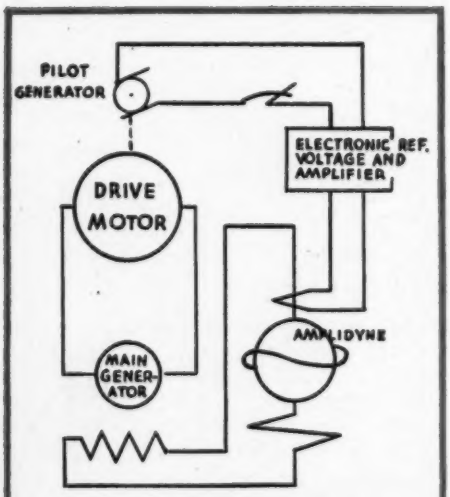
HOLDS SPEEDS JUST SO FROM

This G-E control combination regulates speed precisely over a wider range and adds flexibility to machine usage



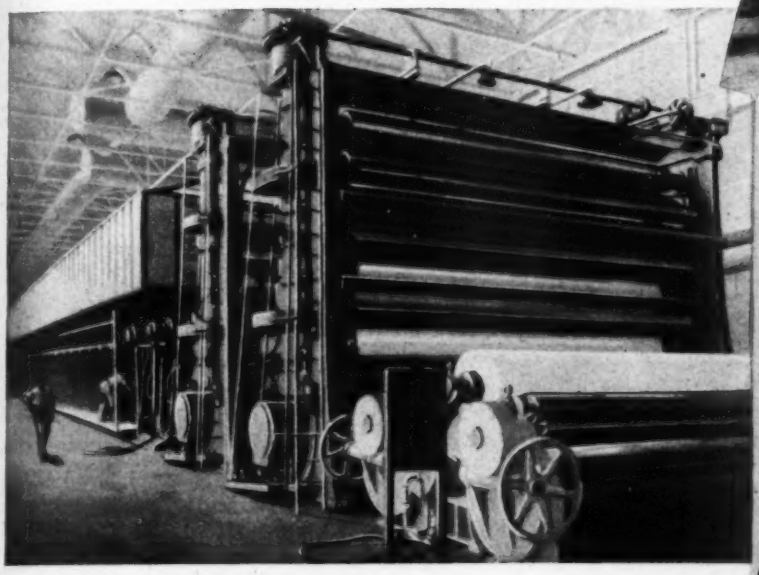
Typical circuit arrangement for speed regulation on single-motor paper machines, using electronics plus the G-E amplidyne. On some installations, the amplidyne alone is used.

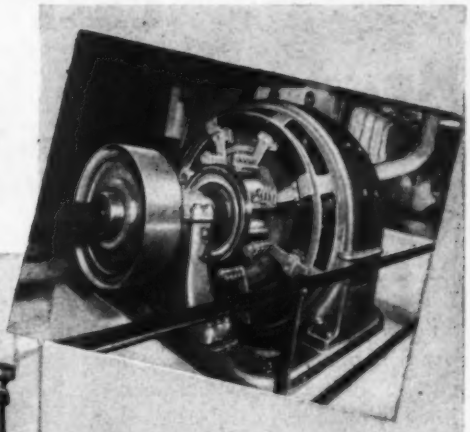
PRECISE, stable speed regulation over a speed range of up to *ten to one* can now be easily maintained on motor-driven paper machines. A control system combining electronic equipment and the G-E amplidyne has operated successfully for several years on machines where great flexibility is required. Whether *plodding* on boxboard or *racing* on tissue, the machines hold the desired speed with high precision!

Ideal for new installations, the system can be applied to most older machine-drives where speed is regulated by voltage control. It is particularly effective in giving extra stability at low speeds. Unusual simplicity, both as to circuits and equipment, helps keep operating continuity high and maintenance costs low.

GENERAL ELECTRIC

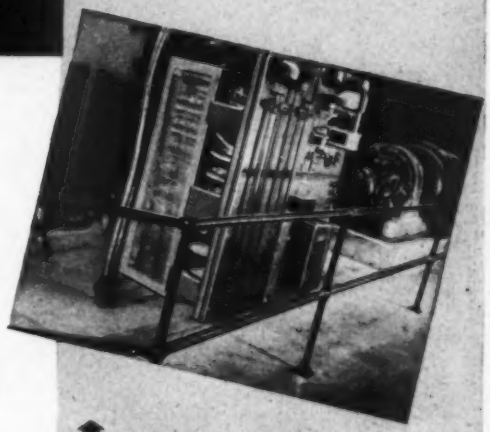
BOARD TO TISSUE





G-E drive motor for paper machine of Mead Corporation, Chillicothe, Ohio. Electronics plus the G-E amplidyne gives highly responsive voltage control, so that speed regulation is maintained over an eleven-to-one range.

All types of paper machines, Fourdrinier or cylinder, single-motor drive or sectional-motor drive, can be equipped with G-E speed regulation. Installations show higher output, fewer breaks, and flexibility to permit making a wider range of grades of paper.



Control panel for single-motor paper machine drive, showing G-E amplidyne at lower left. Motor-generator set furnishing d-c energy to drive motor in background.

Special control features to meet the needs of individual machines or operating cycles are easily incorporated. For example, constant-current control during acceleration can be provided by the same amplidyne that holds speed constant during the run.

The new control system helps back up the well-proved dependability of G-E drive motors and generators. It is one of a family of modern G-E controls applied to sectional drives, auxiliary wet-end drives, and to individual drives for supercalenders and winders.

Whatever your problem, you'll find our application engineering combines advanced electrical methods with a broad background of practical experience in paper-mill electrification. *General Electric Company, Schenectady 5, N. Y.*

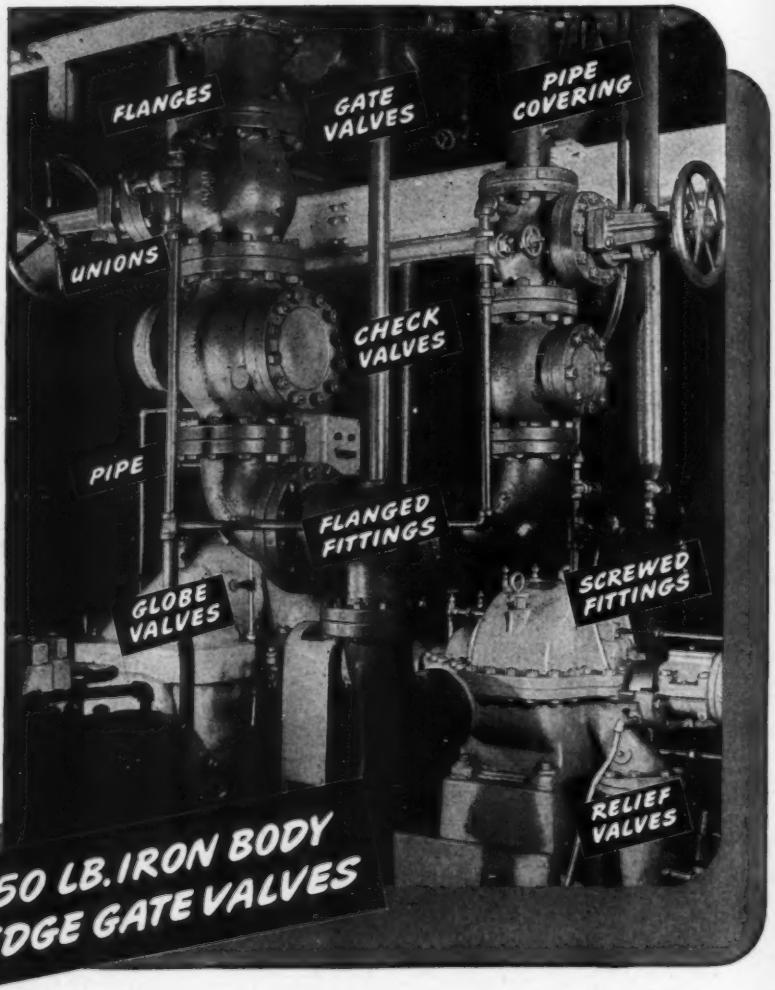
PAPER-MILL DRIVES

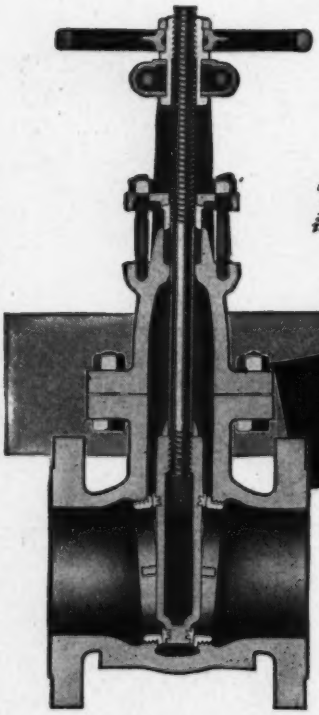
Buy all the BONDS you can—and keep all you buy

CALL ON CRANE . . .
Headquarters for ALL Piping Materials

ONE SOURCE OF SUPPLY
ONE RESPONSIBILITY FOR ALL PARTS
ONE STANDARD OF QUALITY

Look at the advantages you get when you depend on Crane for all your piping material needs. You choose from the world's greatest line—in brass, iron and steel. One source—your Crane Branch or Wholesaler—supplies all your requirements for any job. Undivided responsibility protects the quality and craftsmanship of every part. Thus, while speeding deferred replacements and keeping piping at peak efficiency, you are benefiting by Crane Co.'s 90-year experience in the field of piping equipment.





Pump discharge piping in industrial plant.

SERVICE RECOMMENDATIONS: **Crane 250-lb. Iron Body Wedge Gate Valves** are recommended for services too severe for Standard valves but where the use of steel valves is not justified. Available in all-iron or brass-trimmed; in O. S. & Y. or Non-Rising Stem patterns. With screwed ends up to 4 in.; flanged ends up to 12 in. See your Crane Catalog for complete specifications.

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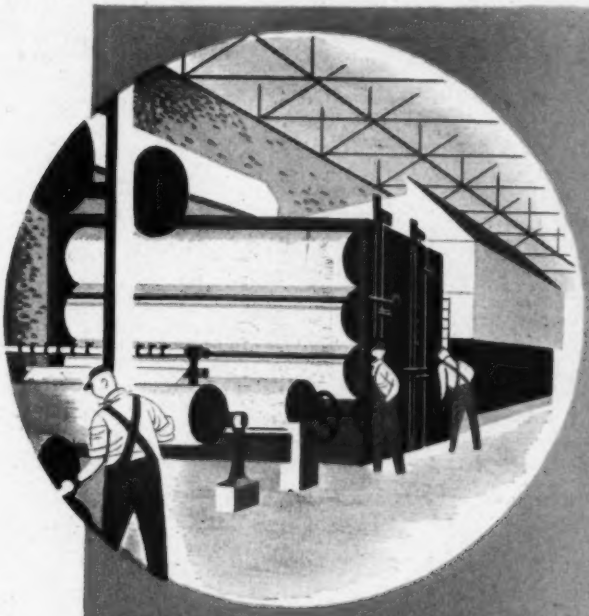
CRANE

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

ONE OF 27 DOW CHEMICALS USED BY THE PAPER INDUSTRY

how the paper industry wrapped up a moldy problem



Moisture means mold. Mold makes costly inroads on profit. That's why the experience of the wrapping paper industry with Dowicide is interesting and important to many others confronted with mold problems.

Wrapping of soap has long been a major problem. Paper used for this purpose is subject to mold attack because of the high moisture content of soap. Moldy packages caused housewives to reject the product. To lick the problem, Dow technicians were called. They investigated . . . experimented . . . went into a huddle . . . came out with Dowicide.

The years have proved the success of Dowicide. Today, many high-moisture products are wrapped in Dowicide treated paper.

In fact, Dowicide has licked many other mold problems in the paper industry, as well as in other fields such as paint, textile, lumber, and many more. If you have a mold problem, write us to find out how Dowicide can help you.

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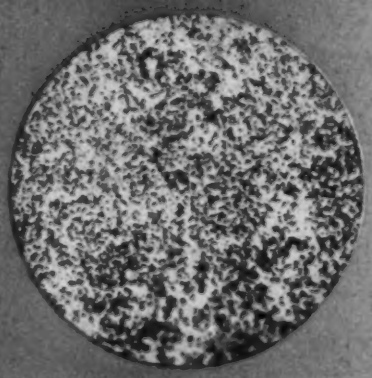

Dowicide

Germicides and fungicides

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

GOOD BEARINGS

ARE BASIC IN GOOD DESIGN

You won't get far in postwar competition without good bearings. And for any machine, a good bearing means simply that type which handles the load most efficiently and economically with the least maintenance cost and worry. That's where Rollway's Right-Angle Loading shines. It reduces load magnitudes and simplifies stresses. There's no piling of thrust loads on radial bearings or radial loads on thrust bearings. Shut-downs for bearing service and replacement are few and far between.

No Oblique Resultants . . .

Rollway's Right-Angle Loading splits compound loads into their two components of pure radial and pure thrust. Each component is carried at right angles to the roller axis on separate bearing assemblies. No oblique loads and resultants, no thermal float or uncalculated thrust can impose secondary pressures on any Rollway Bearing. That means a bearing of given dimension will last longer, or carry heavier loads, or run at higher shaft speeds, or give any proportional combination of all three. Send us your drawings for free analysis. Without cost or obligation, we'll tell you how to get more service from your bearing dollars.

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HANDLING—the Common Denominator of PRODUCTION

LET MEN DIRECT POWER—NOT GENERATE IT!

Only three kinds of work are done on anything: processing, assembling, handling. No production, storage, transportation or delivery of goods can proceed without handling. You can't take it for granted if you're out to get production.

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THE ONE-MAN-GANG

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Tree Surgery Seals the Wounds

Medicine Saved a Mighty Oak

Yes—but experts had to apply the remedy in time, for time was important.

Nor is an inanimate thing like a paper machine any different. Replace battered bearings, correct roll crowns, balance rolls, realign rolls, etc. Check your doctors, draws between sections, check your lubrication. Check everything.

Do these things in time, otherwise the entire machine rapidly deteriorates and, like the neglected oak that falls years too soon, has to be replaced in its entirety and at a greater cost.

Black-Clawson engineers can suggest the "medicine" that will add years to the life of your machine — point out ways to spend dimes today to avoid spending dollars tomorrow.
Give them that opportunity.

SHARTLE Dilts

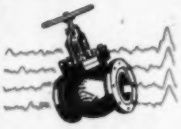
THE BLACK-CLAWSON CO., Hamilton, Ohio
Divisions: Shartle Bros., Middletown, Ohio.
Dilts Machine Works, Fulton, New York.

JENKINS *Pioneering*

HERE'S WHERE THESE VALVES CAN SAVE FOR YOU

WHERE external fire hazards threaten valves with abnormal heating and sudden cooling that might crack other valves.

WHERE conduction of hazardous liquids or gases, as in petroleum or chemical services, requires valves of exceptional toughness.



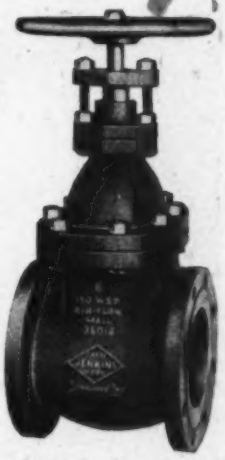
WHERE vibration, shock, or water hammer, individually or in combination, would break valves of other metals.

WHERE a higher corrosion resistance is essential, as in mine, chemical, marine, petroleum and similar services.

WHERE valves are subjected to freezing, or sudden and extreme variations of temperature are a condition of service.

WHERE valves are exposed to destructive atmospheric conditions, such as salt air or corrosive fumes from acids or chemical solutions.

provides a much-needed New Valve for war-burdened industry



Leading again in the drive for greater valve economy, Jenkins introduced the *Air Furnace* Malleable Iron Valve over a year ago.

Developed for certain "tough spots" where shock and strain run up abnormally high repair and replacement costs, these new valves have provided savings well beyond original estimates in many industries. By lasting longer, and requiring less attention, they help materially to conserve valves, and spread scarce maintenance man-hours further.

Next time you order valves for use *where steam pressure does not exceed 150 lbs., and where temperature is not above 450°F.*, check service conditions closely. If the valves must "take a beating", for any of the reasons listed at left, consider Jenkins *Air Furnace* Malleable Iron Valves.

Air Furnace MALLEABLE IRON VALVES

approved and used in these industries

Petroleum • Metal and Coal Mining • Chemical • Paper Synthetic Rubber • Food • Cement • Process Industries Power Plants • Marine • and many other fields where valves are subjected to unusual strains, vibration and destructive service conditions such as those described.

Write for Bulletin No. 192 describing this complete line, in many patterns, sizes 2 in. to 6 in. Write to Jenkins Bros., 80 White Street, New York 13, N. Y. Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago. Jenkins Bros., Ltd., Montreal; London.

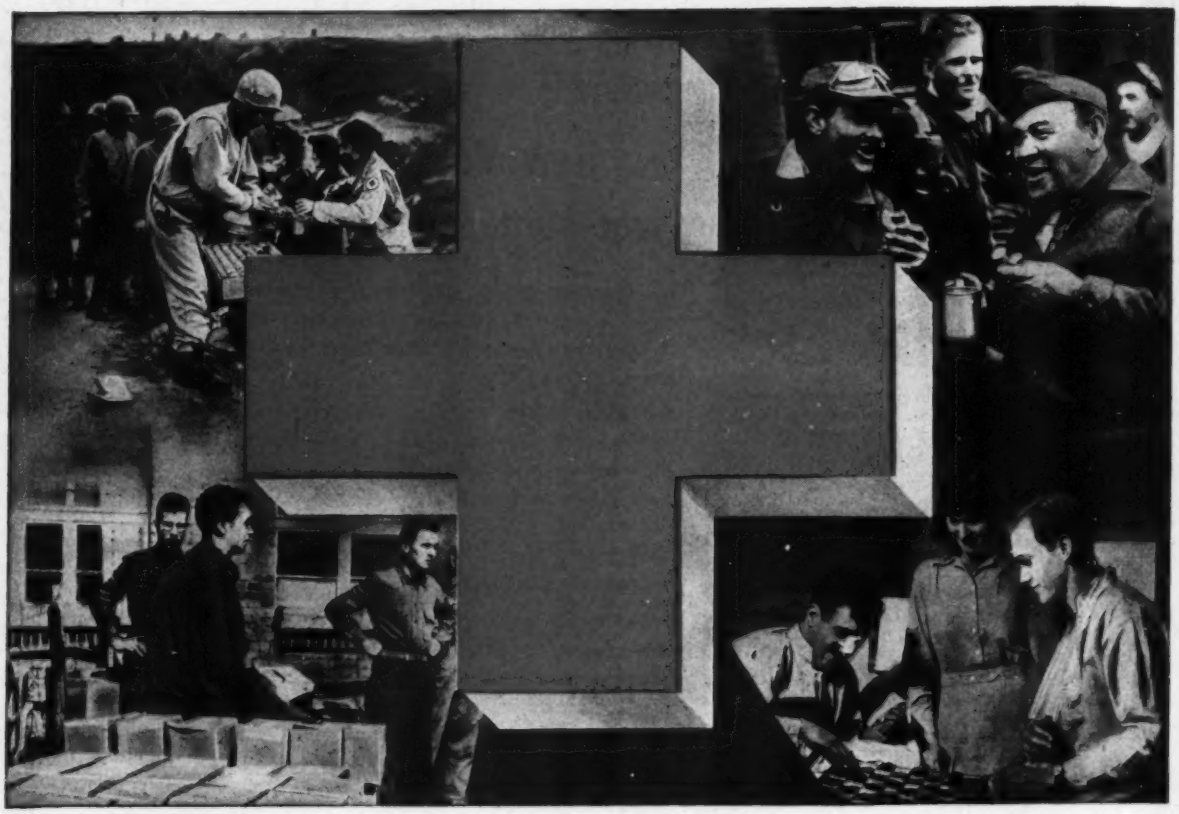
JENKINS VALVES

SINCE 1864

For every Industrial, Engineering, Marine and Commercial Service . . . In Bronze, Iron, Cast Steel and Corrosion-resisting Alloys . . 125 to 600 lbs. pressure

Sold Through Reliable Industrial Distributors Everywhere

This is a call to America's Heart



Your Red Cross faces its greatest task

THIS is the most important appeal for funds in the history of the American Red Cross.

After three years of war the work of your Red Cross is greater than ever. It must serve millions of our fighting men abroad. Lonely men. Homesick men. Wounded men. The Red Cross lends a helping hand to the thousands of returning service men—sick, wounded—desperately in need of friendly guidance.

And remember, YOU . . . and *you* alone . . . keep the Red Cross alive. There are no special funds to keep up its great humanitarian work. The money must come, as always, from the heart of America—you!

We must keep the Red Cross at the side of our fighting men and our wounded heroes. We must help the Red Cross in its vital job of sending food and medicine to war prisoners . . . aiding the ill and lonely overseas . . . collecting life-giving blood plasma. Every Red Cross worker is your personal messenger to your man in uniform.

GIVE *NOW*—
GIVE *MORE*

Keep your RED CROSS *at his side*

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TRADE WINDS

Analysis of Pulpwood Receipts

▶▶▶ THE FOLLOWING ANALYSIS of pulpwood receipts has been released by Frank Block, Director of War Activities Committee of the Pulpwood Consuming Industries:

Review of 1944

Domestic Receipts

In spite of reverses in October, November and December, 1944 was a year of record domestic receipts. The War Production Board goal (14,000,000 cords) was exceeded by 818,900 for a yearly total of 14,818,900 cords.

Herewith is an analysis of domestic receipts for the years 1941 through 1944. (All figures in thousands of cords.)

Year	Lake States	South	Appalachian	Northeast	Pac. N.W.	Totals
1941	1509	6090	1354	2210	2581	13,743
1942	1928	6320	1428	2192	2612	14,480
1943	1356	6166	1277	1858	2444	13,100
1944	2123	6744	1448	1915	2590	14,819

The Present Situation by Regions

Lake States: Due partially to severe weather conditions, mill receipts of domestic pulpwood in the Lake States region dropped sharply in December and threatened to continue well below war needs.

December domestic receipts totalled 136,100 cords, and this was 22 per cent below the same month of 1943. Wet unfavorable logging weather in November was followed by heavy snows in December, which impeded both the production and the transportation of pulpwood.

Because of unusually high production of hard woods in the spring and summer, however, the Lake States region ended the year with the highest domestic pulpwood production on record—2,122,500 cords.

WPB appealed for greater production of long-fibre pulpwood such as spruce and balsam to enable Lake States mills to fulfill their wartime orders.

Northeast: The Northeast's domestic production of pulpwood improved during the late fall and winter due chiefly to a sharp increase in the cutting of farm pulpwood. Northeast mills received 1,914,700 cords of pulpwood during 1944. This was about 56,000 cords more than they got in 1943 but almost 300,000 cords under 1941 and 1942 receipts.

Northeast mills in December took in 129,700 cords of domestic pulpwood, or 23 per cent above the same month in 1943.

"It is to be noted that this increase in domestic production," said WPB, "is largely due to increased efforts by farmers and other part-time wood producers. Their production was up 52 per cent over that of 1943, while company-produced wood dropped 9 per cent below the 1943 level.

"Inventories in the Northeast region are about 14 per cent below December, 1943. This represents a dangerously low inventory position or a drop of 43 per cent below the normal inventory of December, 1941.

"There is an imperative need for heavily increased production of long-fibred species (spruce and fir) in the Northeast."

Appalachian Region: Appalachian mill receipts of domestic pulpwood continued to decline in December, falling 43 per cent below a year ago and creating a dangerous inventory situation.

The serious pulpwood shortage extended also into the Tidewater section of Virginia and the eastern and Piedmont areas of North Carolina.

"A serious situation exists in this region," said WPB. "Many mills' inventories are down to a zero operating level and pulp production is being lost. Several heavy snow storms have made it almost impossible to move pulpwood as it has been cut in the mountainous areas from the woods to the mills."

Mill receipts of domestic pulpwood in the Appalachian region reached the lowest point of the last four years in December—77,500 cords. Due to much better production during the first nine months, however, the year's record was 1,447,700 cords—higher than for any of the three previous years.

South: Mill receipts of southern pulpwood dropped to the lowest point of 1944 in December and created a serious inventory situation which has hampered kraft paper and paperboard production for war.

December receipts were 17 per cent below those of a year ago, aggregating only 471,000 cords.

"This indicates that the slump in production which made itself evident at an earlier date in the Tidewater area of Virginia has spread throughout the southern region," said WPB.

"Allowing for a few exceptions, mills in the southern region are in a precarious inventory position, and production of kraft pulp and paperboard is being lost."

Due to much better pulpwood production during other months of the year, 1944's total output for the South was 6,744,200 cords and set a new high by exceeding receipts for the three previous years.

Pacific Northwest: December domestic receipts in this region, 192,300 cords, were 3 per cent under 1943.

WPB comments, "During the latter part of December logging was curtailed because of the heavy snows which occurred in the mountains, and this coupled with frozen roads, closed many camps."

HIGHLIGHTS

The current special promotion effort in Virginia will be followed by similar programs in North and South Carolina just as soon as WPB arranges with each Governor for the formation of a special State Committee.

These programs are being backed up by special newspaper advertising (Newspaper Pulpwood Committee) and special radio advertising (Periodical Publishers National Committee).

The Farm Press Forest Products Committee is beginning a new program of solicitation of National Advertisers. A Promotion Folder, prepared by us, will aid them in their campaign to get advertisers to devote space to appeals for farm pulpwood production.

We now have in work a plan for the extensive use of outdoor billboards. This plan is being developed with the aid of OWI and the U. S. Forest Service. More details will be sent you when the program is completed.

The U. S. Victory Pulpwood Campaign goes into 1945 in a much stronger position than we began 1944. During the past year many important cooperating groups have joined us in the fight for production.

At the beginning of the year we find an imposing list of closely allied groups, all of whom intend to help the Industry with ingenuity, influence and dollars. Here are a few—

War Production Board, War Manpower Commission, Office of War Information, Timber Production War Project, U.S.D.A. Extension Service, National Grange, Farm Bureau Federation, Newspaper Pulpwood Committee, Periodical Publishers National Committee, Farm Press Forest Products Committee.

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SUBSTITUTE FOR BALSA WOOD FOUND IN CENTRAL AMERICA

From Panama has come a sample shipment of quipo wood, also called "bongo," which the Forest Service of the U. S. Department of Agriculture believes may be used interchangeably with balsa. The lightness of balsa has made it highly important as core material in "sandwich" construction of plywood for aircraft and other war uses. The quipo wood does not have the silky luster of balsa, but it is as light, and its specific gravity is more uniform than is the rule with balsa. This would be an advantage where material with uniform weight and strength is required.

The quipo tree, the botannical name of which is *Cavanillesia plantifolia*, is found principally in Central America. The tree grows more slowly than balsa, not coming to useful size until it is about 30 years old, while balsa grows quickly and is used after 4 to 6 years.—(*Foreign Commerce Weekly*, Dec. 23, 1944.)

◆

NEWFOUNDLAND HANDLES BOWATER'S BOND ISSUE

According to news from Newfoundland, the purchase and offering by a Newfoundland investment house of $2,500,000 of Bowater's Newfoundland Pulp and Paper Mills, Ltd., 4 per cent first mortgage bonds, has made financial history in Newfoundland, this being the first time that a bond issue of this size has been underwritten there. Furthermore, it is anticipated that most of the bonds will be placed with local interests. The proceeds will be used to refund the whole of the outstanding $2,325,500 of first mortgage 5 per cent bonds, due in 1968, which have been called for redemption at 103 and accrued interest. The new bonds are offered at 100 and accrued interest, to yield 4 per cent.

According to an estimate of the company, sales of newsprint and wood pulp for the current year will approximate 200,000 tons, and income available for payment of interest on the first mortgage bonds and debenture stock, before providing for depletion and depreciation, will exceed $2,460,000.

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FINANCIAL

Although the stockmarket fluctuated somewhat in January as a result of the varying tides of war in Europe, paper mill securities showed few radical price changes over those ruling at the end of the year.

Celotex Corporation—Net income for the fiscal year ending October 31 was $562,276 as compared with $530,199 for the previous fiscal year.

Nekoosa-Edwards Paper Company—A 20-year bond issue of $2,500,000 carrying 3 per cent interest has been authorized to replace the present obligations of $1,250,000 to furnish additional working capital and for plant improvements.

Marathon Corporation—Net earnings for the year ending October 31 were $1,603,000 as compared with $1,286,000 for the previous fiscal year.

Masonite Corporation—Net profit for the first quarter of the fiscal year ending November 30 was $318,209 as against $282,554 for the comparable quarter in the preceding fiscal year.

Paraffine Companies—Net earnings for the quarter ending December 31 were $570,884, and for the six month period $1,020,790 as compared respectively with $520,181 and $945,783 in the corresponding periods of 1943.

Western Tablet & Stationery Company—Net profit for the fiscal year ending October 31 was $624,986 as against $600,787 for the previous year.

New York Stock Exchange—Stocks

	Closing Prices Jan. 25, 1945	Dec. 26, 1944
A.P.W. Products ..	4⅞	4⅛
Celotex	15¼	14⅜
Same Preferred..	19	19
Certain-teed Prod..	8⅛	6⅝
Same Preferred..	137½	125
Champion P&F Co.	29½	*29–29½
Same Preferred..	114½	*113–114
Container Corp. ...	28¼	28½
Cont. Diamond ...	11⅜	11¼
Crown Zellerbach..	21½	21¾
Same Preferred..	103⅛	*103⅛–103⅜
Dixie Vortex	20	18
Same "A"	48½	*47¾–48¼
Robert Gair	5½	4⅜
Same Preferred..	17	15½
Gaylord Container .	23½	*21¼–21¾
Same Preferred.	*58–28¾	*57½–58
International Paper.	19¾	20
Same Preferred..	87	93
Kimberly-Clark	42	*37½–38
McAndrews & Forbes.	*31–33	28¾
Masonite	42½	40⅛
Mead Corp.	13	12⅝
Same Preferred..	*98¾–100½	*99-100
National Container.	14	13¼
Paraffine Cos.....	57	56
Same Preferred..	108¼	109
Rayonier, Inc.....	16¼	16¾
Same Preferred..	35	*34–34½
Scott Paper *43–44	*40⅜–42	
Same 4½% Pref.*112-114	*112-114½	
Same 4% Pref...*109-110½	*109-111	
Sutherland Paper ..*33⅞–34⅞	*32–33	
Union Bag & Paper	14½	14¾
U. S. Gypsum.....	78	77¼
Same Pref.....*181⅛–183	*180–183	
West Vt. P&P Co..23¼–24	23¼	
Same Preferred..	109½	109–110

New York Stock Exchange—Bonds

Abitibi 5%	102	109
Celotex 3¾%	.....	.....
Certain-teed 5½%..	102¼	101½
Champion P&F Co.	.....	.....
Intl. Paper 5%....	.....	.....
Same 6%	.....	106⅜
West Va. P&P Co.	.....	.....

New York Curb Exchange—Stocks

Great Northern....	36	.....
Hummel Ross	7¾	6¾
St. Regis	6¼	5¾
Taggart	.....	5¾
United Wall Paper.	4⅜	4⅜

*Closing Bid and Asked Prices.

PAPER · · · America's 6th Industry

GUN BARRELS OF PAPER

(NEWS ITEM: *Barrels of AAF rocket guns are made of paper treated with heat-resistant plastic.*)

Barrels of "flying bazookas" installed on Fighter Planes are made of paper. Resin-impregnated paper tubes are hardened in ovens, painted, and assembled in threes for mounting under plane wings. These bazookas are fired by a trigger set in the fighter's control stick and have already wreaked havoc on enemy installations in Europe and Asia.

Asphalt paper for airplane runways . . . Condenser paper for electrical equipment . . . Cloth lined paper for maps . . . Filter paper for aircraft engines . . . New uses for paper, calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

Puseyjones men and production facilities are at War—and Industry at War is Industry thinking and working at hitherto unheard of speeds. Our Research and Development Committee, working on the problems of America at War, is finding many practical and technical advantages that will be of incalculable value to America at peace—to the Paper Making Machinery of the future.

We are in a position to repair or modernize existing machines where essential to the war effort and as approved by the War Production Board... If you have not received your copy of our bulletin, "New Features in Paper Making Machinery", write for it today.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF PJ MARK SUPERIOR QUALITY

ANOTHER 5% REDUCTION IN PULP CONSUMPTION

A telegram sent January 20 to every consumer of market pulp, ordering the reduction of 5 per cent in the former allowance for consumption of such pulp, accented the tightening situation in the paper industry. The reduction followed by only a month the allocation of pulp for the first quarter, and applies to all pulp consumption for the first quarter by converter mills. Pulpwood production in December was lower than that in previous months, and 17 per cent below that of December, 1943. An effort is being made to relieve this situation by the allocation of more prisoners of war to pulpwood cutting.

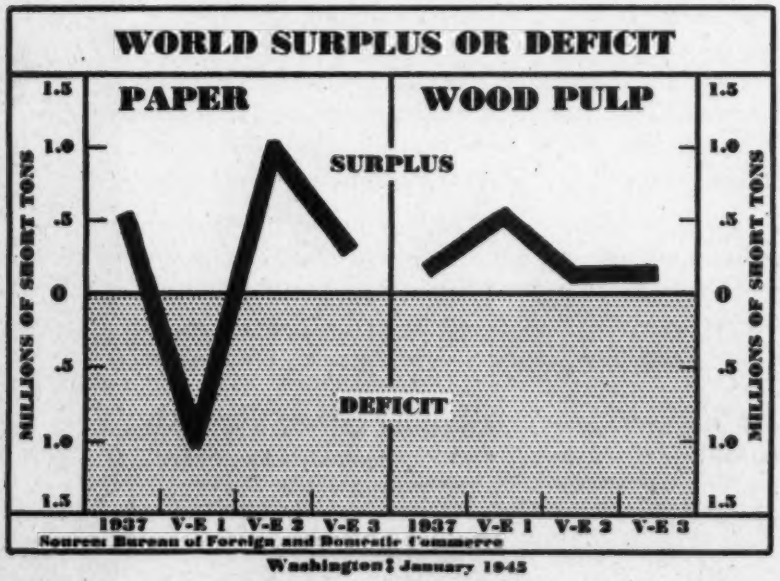
This developing situation during the last few weeks is further accented by a critical survey of the prospects of the industry before and after V-E day by W. LeRoy Neubrech, Donald Collier, and Charles W. Boyce of the United States Chamber of Commerce, in a brochure released January 26. This brochure states that "a tight market situation in paper and wood pulp could easily continue for three years following the close of the European War, both in the United States and in the world." Using the terminology of V-E 1 to designate the first twelve months following the end of the European War, the accompanying forecasts are made for the United States in thousands of tons.

	Paper Production	Pulp Production	Pulp Consumption
V-E 1	18,611	10,658	12,378
V-E 2	10,221	11,244	12,882
V-E 3	19,157	11,694	13,289

Outside of Washington developments bearing directly on the paper industry, other news events have an important indirect relation to the paper industry's future. The need for more men for the armed services called forth a directive from the War Manpower Commission as a guide to the enrollment of men in the 26 to 29 year group. Pulpwood cutting is listed as a critical industry from which men should not be taken except as a last resort, and pulp production is similarly listed. Production of papers of the wrapping type are listed as essential, as are also paperboards. The order does not materially change the former schedule of essential activities in the paper and paperboard industry.

The Bureau of the Census broke all records for prompt issuance of a preliminary report of the paper and pulp industry for 1944, the report being released only two weeks after the end of 1944. The output of paper and paperboard was the largest for any year on record except 1941, the total being 17,182,888 tons, of which 8,210,062 was paper and 8,972,826 paperboard. The basic grades of paper showed a decrease as compared with 1943, but special papers brought up the total to the high record figure.

OPA orders reduced the ceiling on imported Canadian pulpwood $4 per cord, this applying to the northeastern portion of the Dominion. A later order authorized an increase of $4 per ton, effective January 30, on unbleached and bleached soda pulp. This increase will result in a decrease in the subsidy allowed to manufacturers of such pulp. It is not anticipated that the increased ceiling will force a higher price for the papers using such pulp. Ceiling prices for paperboard made of straw or wastepaper have been lifted $2.50 per ton.



▶▶▶ MANUFACTURERS' ceiling prices for paperboard made from wastepaper or straw and sold east of the Rocky Mountains were increased by the Office of Price Administration effective January 20. The increases are $2 per ton, or the equivalent on the wastepaper grades of paperboard, and the equivalent of $2.50 a ton on the strawboard.

SHIPMENT OF NEWSPRINT TO FRANCE IS PROTESTED

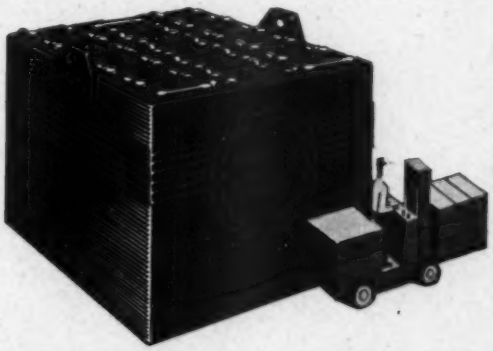
The tight situation forecast for the paper industry has brought forth a formal letter to the State Department from the so-called Boren Committee of the House of Representatives, protesting against the proposal to make large shipments of American newsprint to France. The Boren Committee was named to investigate the paper shortage in this country, and the protest signed by two members of the Committee calls attention to the reports that 5,000 tons of newsprint will be shipped to France within a month. The letter was signed by Chairman Boren (D) and Representative Clarence Brown (R), the two members of the Committee who are still members of the House.

The letter said that the shipment would not only curtail the amount of paper needed here, but would tie up shipping facilities. It suggested that there is a surplus of paper in Scandinavia, and that Russia should be able to help relieve the continental situation. State department authorities, however, said that Scandinavian paper is not yet available because of German control of the Baltic and the Skagerrak.

Another angle of the foreign situa-

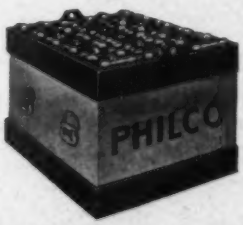
LET PHILCO REDUCE YOUR POST-WAR PRODUCTION COSTS

Philco is ready, *today,* with the advanced high-capacity battery performance and long-life economy you'll need in your post-war operations. The complete Philco post-war line includes modern Storage Batteries for all motive power and stationary needs. It will save you dollars in depreciation, up-keep and maintenance costs to specify Philco. Let us send you the latest Philco Battery catalogs of types for your special requirements. Philco Corporation, Storage Battery Division, Trenton 7, N. J.



THE NEW PHILCO "THIRTY"—An outstanding post-war product for industrial trucks is the new Philco "Thirty" Storage Battery that gives 30% longer life and is identified by its distinctive red top. Now available in certain types and limited quantities.

Philco Telephone and Control Battery Cell with Floté element



Typical Philco Electric Industrial Truck Battery in Steel Tray

Specify PHILCO STORAGE BATTERIES

ition is the plan of the Army to send to France some American paper manufacturing experts to assist the French in getting their mills in production, not only for the manufacture of newsprint, but also coarse and fine papers. The Congressmen called to Mr. Stettinius' attention the fact that France in prewar days produced most of the paper it needed for home consumption, and that as far as known the French mills were not seriously damaged during the German occupation.

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VIRGINIA FIRST STATE IN SOUTH TO PROTECT ENTIRE FOREST AREA

From the American Forest Products Industries, Inc., comes the announcement that on January 1, Virginia became the first state in the South to place its entire forest area—some 14,545,000 acres—under organized protection.

A pattern for greater postwar economic benefits from Southern forests is seen in the extension of Virginia's forest fire protection system to include the entire state.

Scott County, which requested protection on the first of the year, was the last county to come under the fire control program. Arlington County, largely urban and relatively unforested, is not deemed in need of protection.

Government and industrial foresters have commented favorably on the plan developed by State Forester George Dean and Conservation Commission Chairman William A. Wright, and recommend the furtherance of similar systems in other Southern states.

Excellent co-operation on a county basis is a large factor in the successful operation of the system, according to Mr. Dean. He said that 92 of the 99 organized counties have voluntarily adopted the provisions of Section 545-b of the Virginia code, which makes it unlawful to burn brush or debris from March 1 to May 15, except between 4 p. m. and midnight.

Since the passage of the law in 1940, spring season fires resulting from brush burning have decreased sharply. The area burned has also become considerably smaller indicating quicker control methods when fire did occur.

Although Virginia's program held burns on protected land to only 0.23 per cent of the total protected acreage, forest experts agree with Mr. Dean's statement that installation of a statewide protection system does not end the job. Fire prevention and control must be intensified in all counties, they caution, if damages caused by woods fires are to be kept at a minimum, and the forests of Virginia kept green.

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CHARTER MEMBERS OF 25-YR. CLUB GUESTS OF PRESIDENT SMITH, CENTRAL PAPER CO.

Thirty-two charter members of the Central Paper Company's new Twenty-five Year Club were guests of the company's president, C. W. Smith, at a banquet held in the Occidental Hotel (Muskegon, Mich.).

The total service record of the charter members of the Club adds up to 993 years. Besides these honored men, Central's roll also includes many others whose service record is over 25 years, but not consecutive. The tales these old-timers spun at the organization banquet would have found a good audience in anyone connected with the paper business—changes through the years, starting with the creation of the company in 1899 down to the present modern mill with four paper machines.

At the banquet, President Smith presented Al Zahrt, the oldest employee of the Club, with a gold watch. As soon as watches are available, the other charter members will receive such a token. Speaking to the group, President Smith pointed out that Central Paper's record through the past 44 years has been one of continuous operation, thanks, in a large part, to the co-operation of the key employees. He told of postwar plans, including methods of assuring continuous employment and continuance of the policy of employing older, more dependable employees.

Don McDowell, personnel director of the company, acted as toastmaster for the occasion. Appropriately enough, his remarks were based on the theme "Well done, thou good and faithful servant."

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LARGE TIMBER PURCHASE MAY EFFECT REOPENING OF RAYONIER SHELTON PLANT

The reopening of the Rayonier, Inc., pulp plant at Shelton, Washington, will be made possible by the purchase of several million dollars worth of timber in Clallam County, on the Olympic peninsula of Washington, from the Bloidel-Donovan lumber mills of Bellingham, Washington. All of that company's timber holdings in Clallam County are involved in the deal, it is reported, with the lumber firm announcing plans to curtail its mill operations at Bellingham as a result of the deal. The mill at Shelton was closed in 1943 because of a log shortage.

LEFT—First annual dinner of Quarter Century Club, Central Paper Company, Muskegon, Mich. RIGHT—C. W. Smith, president of Central Paper Co., presents gold watch to Al Zahrt, oldest employee and member of the Club.

Meet Mr. Quality

ONE LOOK AT Bill Seebode — 50 year man at Allis-Chalmers Norwood Works — tells you that he sleeps well nights.

One reason is that he and hundreds of his fellow craftsmen at Allis-Chalmers have won *and are keeping* the confidence of engineers and operating men throughout American Industry.

That means a lot to veterans like Bill who've made a career of building great motors.

Bill's a stator-winder, as you can see—a living example of the truism that *men* make motors.

No machine known can assemble the maze of wiring and insulation that goes into a stator with his skill and care. No machine can fully test how *well* he's done his job.

There's only one test . . . wait 5, 10, 15 years and *see*.

And that's the test that has proved Allis-Chalmers motors are *great* motors. That's why you hear it said so often: *"You can depend on Allis-Chalmers Motors!"*

Yes, hundreds of Allis-Chalmers men—*quality* men like Bill Seebode — know they have a big personal stake in every Allis-Chalmers motor. When they build a great motor for you, they're making a friend . . . and they know that's something no company and its workers can have too many of. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

• • •

♪ *Tune in the Boston Symphony, Blue Network, Saturday at 8:30 pm, EWT.*

A 1729

YOU CAN DEPEND ON ALLIS-CHALMERS MOTORS

Production of Board UP!

Paper down — in 1944

▶▶▶ IN A REPORT issued last month by the Bureau of the Census, preliminary production figures for 1944 are given. The production of paper and paperboard in the United States was 17,182,888 tons in 1944. This is the largest production of these products in any single year except in 1941. It is significant that this near-record was made in spite of the diversion of labor, material, and equipment to war production, and of the shut-down of 16 mills.

The production of paper, which is particularly dependent upon the availability of wood pulp, was slightly lower in 1944 than in 1943 and substantially lower than in 1941 and 1942. The output of paperboard, on the other hand, rose to 8,972,826 tons, exceeding any other previous record. The most important increases were in container and miscellaneous boards which are particularly important for war uses. The achievement of this record in paperboard is attributed principally to the effectiveness of the waste paper salvage campaign. Sufficient waste paper was made available so that large scale diversion of wood pulp from paper to paperboard manufacture was unnecessary.

The 1944 production of newsprint at 720,752 tons is the lowest recorded output in the last 45 years. Shipping sack, special industrial, sanitary, absorbent and building papers were the only types of paper for which the 1944 production exceeded that of 1943. The production of all other grades of paper was slightly less than in 1943.

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▶▶▶ PULP AND PAPER manufacturers in Northwest Washington have expressed interest in the recent offering for sale of 300,000,000 board feet of standing timber in the Ross dam basin in Whatcom County. The timber must be removed before the area can be flooded. The contractor must post a $500,000 performance bond and will be given six years for the work. About 90 or 100 million feet of the stand is believed suitable for profitable removal for sale. The Seattle Board of Public Works is handling the sale.

◆

TARPAULIN MADE OF PAPER AND BURLAP WILL SAVE COTTON DUCK

Substantial quantities of cotton duck will be saved by the Army through the adoption of a paper and burlap lamination tarpaulin. Immediate procurements of large amounts of the new material are being made so as to provide waterproof coverings for front line supplies. It is anticipated that the savings of cotton duck will amount to millions of yards during 1945 and, at the same time, it will be possible to increase the supply of waterproof coverings available for front line use.

Paper laminated to burlap with a special asphalt has provided satisfactory protection for the packaging of many Quartermaster Corps supplies shipped to all parts of the world, but this is the first time these materials have been used for continuous exposure under the wide variety of weather conditions encountered in fighting a global war. Tests on the paper and burlap tarpaulin indicate that good durability can be obtained with materials immediately available in large quantities. The cost of the new tarpaulin will be much less than for cotton duck, and the reduction in both weight and bulk combine to conserve shipping space and provide a unit which can be handled by two men with ease.

The initial development work on the new tarpaulin has resulted in substantial improvements being made over commercial types of materials previously available. Already there are definite indications that the durability of the paper-asphalt-burlap covering can be greatly improved. At the request of the War Department, the Institute of Paper Chemistry has initiated a project for the study of this problem and the treatment of paper to improve its resistance to weathering will be worked upon by some of the country's leading scientists in this field.

Use of the new tarpaulin has been necessitated by the inability of the cotton textile industry to maintain a sufficient rate of production to meet military requirements of cotton duck.

The current specification for the new tarpaulins, which are known officially as Paulins, Burlaps, Large, OQMG No. 192, provide for two combinations of materials, one having two layers or plies of paper, the other but a single sheet. The paper is an olive drab high wet-strength kraft weighing 40 pounds per ream (24 x 36—500 and is creped so that the final weight is 48 pounds per ream. The paper is sized so that it retains a high percentage of its strength when wet and the creping makes it fairly flexible. Asphalt is used as an adhesive and an additional water proofing agent, and is applied at a rate of more than 100 pounds per ream. The asphalt employed does not crack at low temperatures nor bleed at high temperatues. The burlap fabric is a standard product 40 inches in width and hav-

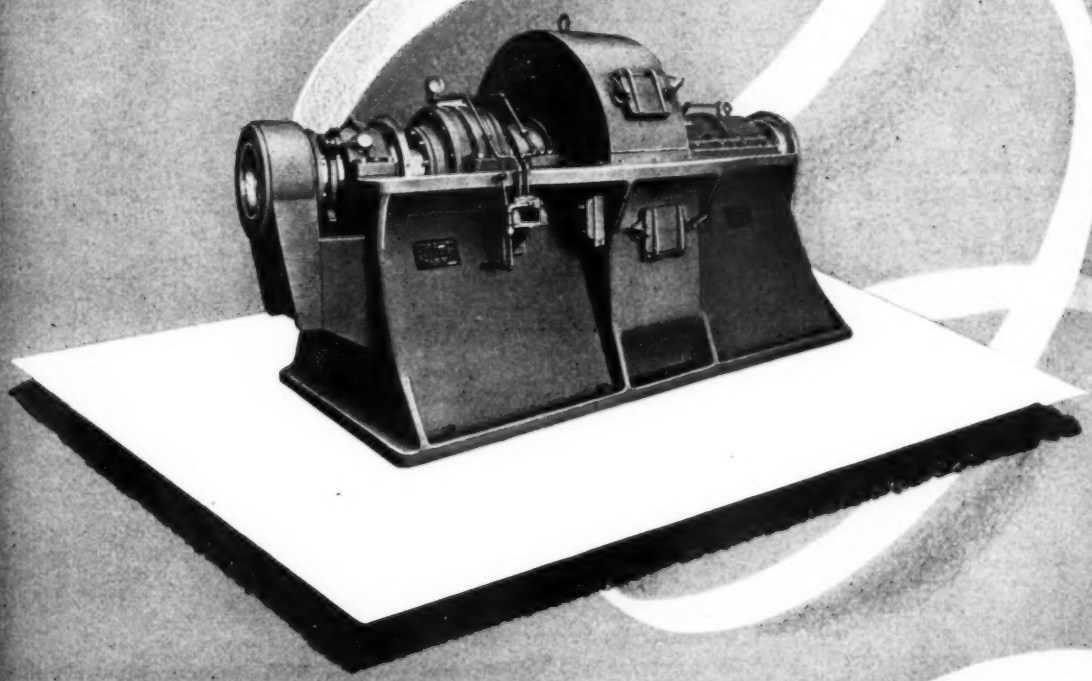
Paper and Paperboard: Production in the United States by Major Types, 1942-1944
(Tons of 2,000 pounds)

Type of paper and paperboard	1942	1943	1944*
All types	17,082,862	17,035,688	17,182,888
Paper, total	9,114,678	8,415,254	8,210,062
Newsprint	967,211	811,309	720,752
Groundwood printing and specialty paper	610,168	585,673	581,680
Book paper	1,704,029	1,592,878	1,443,423
Fine paper	1,066,576	1,020,601	967,801
Coarse wrapping, converting and bag paper	**2,275,250	1,946,908	1,922,326
Shipping sack paper	250,591	315,469	391,263
Special industrial paper	187,897	207,662	245,639
Sanitary paper	811,343	806,023	808,773
Tissue paper	170,653	162,766	157,358
Absorbent paper	64,530	88,254	90,271
Building paper	1,001,383	877,582	880,776
Other paper, not elsewhere classified	16,148	129	.....
Paperboard, total	7,969,184	8,620,434	8,972,826
Containerboard	3,755,438	4,087,972	4,240,336
Folding boxboard	1,711,795	2,047,238	2,114,377
Set-up boxboard	996,688	829,102	749,504
Cardboard	53,963	63,757	69,748
Building board	1,052,054	1,063,851	1,087,482
Miscellaneous board	399,246	528,514	711,379

(*) Preliminary. Data for 1944 are virtually complete for all practical purposes, although they include estimates for the production of 61 mills in December. Data for the other eleven months are complete, and the over-all percentage of estimate for all types of paper and paperboard for the year 1944 is 0.6 per cent. In no case does the proportion of estimate for any of the several types of paper and paperboard exceed 2.5 per cent.
(**) Includes data on the production of cup stock subsequently classified as folding boxboard.

Sutherland Continuous Beating and Refining System

Two Sutherlands Alone do all stock preparation for two machine mill making SC and MF Book and Magazine.



SUTHERLAND REFINER CORPORATION

Trenton, N. J.

ing a minimum weight of 10 ounces.

The finished tarpaulin is manufactured almost exactly as the one produced with cotton duck and conforms to standard Quartermaster design. Five widths of the laminated materials are sown together and the turned edges equipped with grommets. Each tarpaulin requires 72 yards of material.

◆

CHEMICAL FIRM BUYS RENFREW MILL FROM THE L. L. BROWN PAPER CO.

The former Renfrew mill of the L. L. Brown Paper Company, in Adams, Massachusetts, has been purchased by the Dewey and Almy Chemical Company, chemical firm of Cambridge, Massachusetts.

The new owners plan extensive alterations and improvements, after which the plant will be used for the manufacture of the company's products. It is stated that rubberized paper will be manufactured; paper to be secured from the Zylonite plant of Brightwater Paper Company.

◆

▶▶▶ A FREE GRANT of $100,000 has been made by Price Bros. and Company to the town of Kenogami, Quebec, to help that municipality undertake certain urgent public works. An arrangement negotiating this move was recently made between the company and the town.

◆

MICHIGAN PLANS EXTENSIVE STREAM POLLUTION STUDY

A plan for the study of stream pollution in the State of Michigan was presented to representatives of the Michigan paper industry and of the National Council for Stream Improvement of the Pulp Paper and Paper Board Industries, Inc., in Kalamazoo (Mich.) last month.

The plan as developed by the Council has the approval of the State Stream Control Commission. Final approval rests with a committee representing Michigan paper-mill members of the Council; namely, Dwight L. Stocker (Plainwell), Ralph A. Hayward (Kalamazoo), and E. W. Kiefer (Port Huron), all paper mill presidents.

Russell Winget, Council executive secretary, and Dr. Harry Gehm, technical adviser, are negotiating with the colleges of Michigan to effect a cooperative research development plan in which the Mellon Institute of Industrial Research will have a part. When the first arrangements have been made, the work will progress along two lines: research for development of waste by-products, and engineering groundwork to integrate collection and purifying processes with mill operations.

The present plan calls for a demonstration plant to be set up in the Kalamazoo River valley for research and testing of waste.

◆

▶▶▶ PULPWOOD PRODUCERS of the Northeast must cut about 13 per cent more pulpwood this year than last, if they are to meet the goal set for the region by the WPB. The mills in the area received 1,911,700 cords of pulpwood in 1944. This was an increase of 56,000 cords over the previous year—300,000 cords behind 1942. A considerable increase was noted in December, due to increased cuttings by farmers.

◆

WESTMINSTER PAPER COMPANY EXPANSION PLAN FORMULATED

Work on the $1,250,000 expansion program to be carried on by the Westminster Paper Company, Ltd., New Westminster, British Columbia, has been formulated with the placing of a contract with Dominion Construction Company, Ltd., for the building involved in the program.

The plan calls for erection of a 111 x 126 ft. expansion to the finishing room, and a new boiler house and machine room 177 x 130 ft. The present wharf will be removed and completely rebuilt and extended along the entire length of the water front owned by the company. In addition, a new office building will be erected. This has been designed to tie in with a similar structure which is being erected for an adjoining industrial plant; the present office will be merged into the main industrial building.

Machinery for the new buildings has been under design, construction, and test over a period of months and will represent the most modern of its kind, embodying the work of experts preparing for postwar business.

The completion of the new plant will double the capacity of the mill, and will increase the number of employees from around 235 to 400.

◆

WISCONSIN WOOD USING INDUSTRIES MEET AND DISCUSS REFORESTATION

Before a meeting of the Wisconsin Forest Industries Committee, held February 1 at the Plankinton Hotel, Milwaukee, Wisconsin, F. G. Wilson, of the Wisconsin Conservation Commission, stated that Wisconsin paper plants and other wood using industries have set a pace for the nation in reforestation to assure future timber supplies.

The meeting of the Wisconsin group was held with representatives of similar organizations of Michigan and Minnesota.

Mr. Wilson said the Wisconsin commission has certified 192,000 acres of industrial forests upon which more than 21,000,000 trees have been planted. No other state, he said, has approached this record.

Accepted by the committee was a plan offered by Jay Price, regional forester, for an inventory of the Lake States' timber resources with respect to providing raw materials for pulp and paper industries and for a study of industry's future timber needs. Such studies, he explained, were necessary in order to assure a proper ballance of supply and requirements to put the wood industries on a sound basis.

◆

▶▶▶ THE CORPORATE NAME of St. Regis Paper Company of Canada, Ltd. (incorporated under the laws of the Prov. of Quebec in 1920) was changed on January 3 to St. Regis Timber Company, Ltd. On January 4, the corporate name of Bates Valve Bag Company, Ltd. (incorporated under the laws of the Dominion of Canada in 1921), manufacturer of heavy-duty multi-wall paper bags, was changed to St. Regis Paper Company (Canada), Ltd. All activities are now conducted under the new corporate names. The changes involve no change of ownership, management, or policies.

◆

▶▶▶ THE BUSINESS OF Sommerville Limited, manufacturers of paper boxes, toys, and other products made of boxboard and wood, in London, Ontario, has been purchased by W. G. Weston, member of the British Parliament. Mr. Weston also owns The E. B. Eddy Company, of Hull, Quebec, and J. R. Booth, Ltd., of Ottawa, Ontario. The sale of Somerville Limited stock to Mr. Weston has not resulted in any change of officers in the corporation.

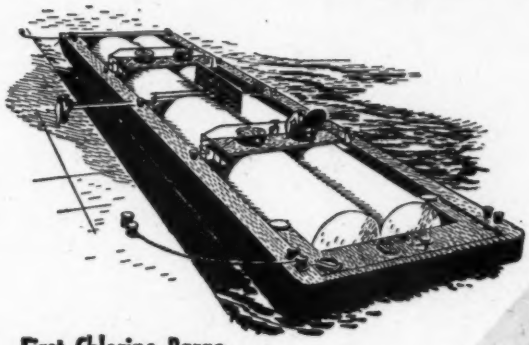
◆

NEW HAMPSHIRE MILLS SOLD

The Hinsdale Paper Manufacturing Company, and the White-Washburne Company, both of Hinsdale, New Hampshire, have been purchased by Floyd D. Graham, of South Hadley (Mass.), and Leo Graton and Harold Weeks, both of Hinsdale.

Mr. Graton and Mr. Weeks have

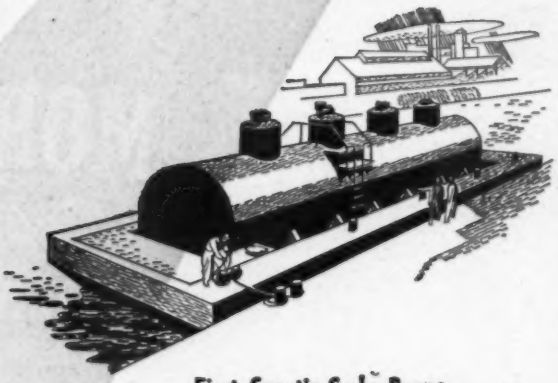
Columbia Spotlight



First Chlorine Barge

Newest development in the transportation of Liquid Chlorine is this barge, especially designed by Columbia to facilitate shipments via inland waterways. All river shipments of this chemical were previously limited to one-ton containers—a slow, tedious and costly method by comparison.

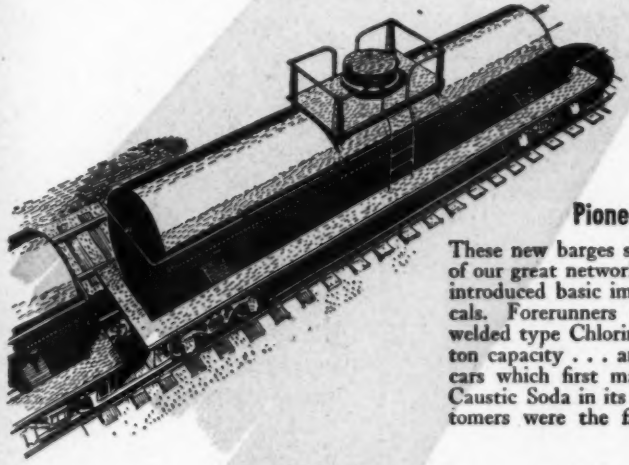
Cradling four fusion welded steel tanks in its 135-foot steel hull, the new barge has a capacity of 380 tons of Liquid Chlorine. It may be loaded or unloaded from either side; connections are so designed as to prevent manifolding of the tanks.



First Caustic Soda Barge

Another 135-foot barge has just been placed in service by Columbia. This one, the first designed specifically for Caustic Soda, will carry approximately 500 tons of Caustic Liquor. Its huge, welded tank is supported by suitable framework in a heavy steel hull.

Foamglas insulation guards the Caustic from freezing and a caustic resistant lining prevents metallic contamination of the chemical in transit.



Pioneer in Better Transportation

These new barges show the way to the more advantageous use of our great network of inland waterways. Similarly, Columbia introduced basic improvements in rail transportation of chemicals. Forerunners of these barges were Columbia's fusion welded type Chlorine tank cars . . . then Chlorine cars of 55 ton capacity . . . and the insulated and specially lined welded cars which first made possible the shipment of 73% Liquid Caustic Soda in its purest form. In every case, Columbia customers were the first to profit by these innovations.

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COLUMBIA ESSENTIAL INDUSTRIAL CHEMICALS

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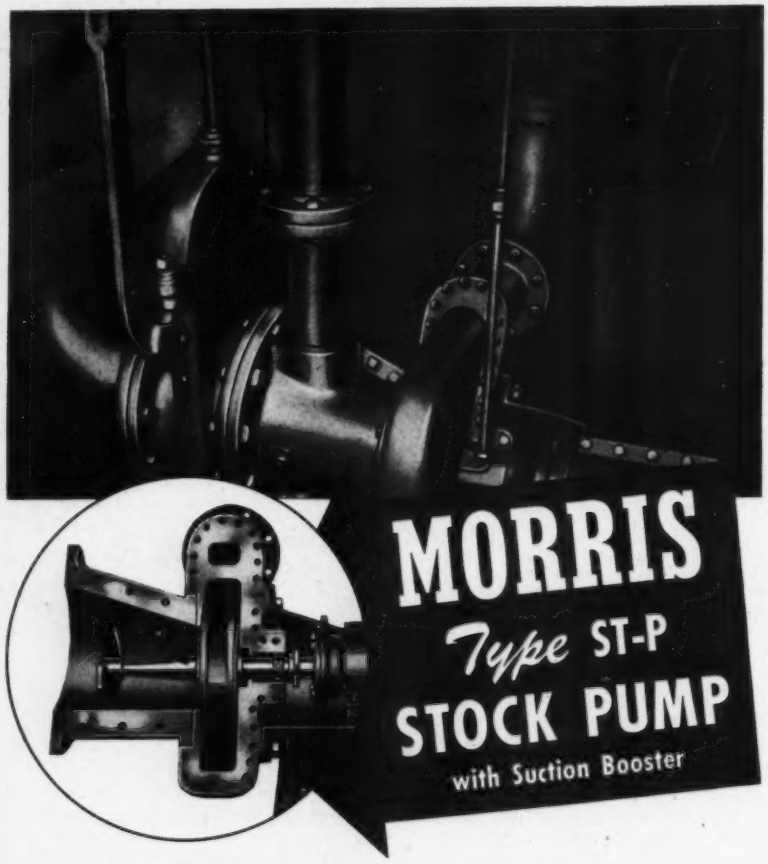
Modified Sodas • Caustic Ash • Phosflake • Calcene T (Precipitated Calcium Carbonate) • Calcium Hypochlorite



STEADY, UNINTERRUPTED Flow

● This Morris 4-inch ST-P Stock Pump installation in one of the largest mills in the East handles 100 tons per day of 3½% consistency book paper stock, delivering against an 85-foot total dynamic head from a chest to the head box on the paper machine. Fluctuations have not been evidenced. This pump has been in operation for five years without major replacements.

Three features in Morris design insure a steady, uninterrupted flow of stock. 1. Large vent at the suction nozzle. 2. The horizontal top position of the discharge nozzle which overcomes the usual cause of airbinding from foaming stock and accumulated entrained air. 3. The suction booster (axial flow propeller) which maintains a uniform flow of stock into the eye of the impeller.

Write for Bulletin 176, giving sizes, capacities and engineering data.

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MORRIS CENTRIFUGAL PUMPS

been executives in the Hinsdale plants, while Mr. Graham is president of the Graham Manufacturing Company, of Holyoke, Massachusetts, a paper converter. Mr. Graham will be president of both of the Hinsdale companies.

The Hinsdale Paper Manufacturing Company is a paper mill with two machines, while the White-Washburne Company, an adjoining plant, is a converting mill.

◆

TIMBER INTERESTS MAY BUILD SULPHATE PULP MILL AT PORT ALBERNI

The British Columbia provincial government is being asked to approve an assessment agreement between Bloedel, Stewart & Welch timber interests and the Port Alberni (B. C.) city council relative to the proposed building of a sulphate pulp plant at Port Alberni.

It is planned to construct a plant with an annual capacity of 50,000 tons and employing 200 workers, with the operators and the city council being agreed on a 20-year fixed assessment proposal. The new mill would be built alongside the company's present sawmill.

◆

BROWN COMPANY LETS OIL RIGHTS ON FLA. PROPERTY

The latter part of January, Brown Company, Berlin, New Hampshire, announced it had concluded the leasing of oil drilling privileges on its land holdings in Florida to the Humble Oil Refining Company.

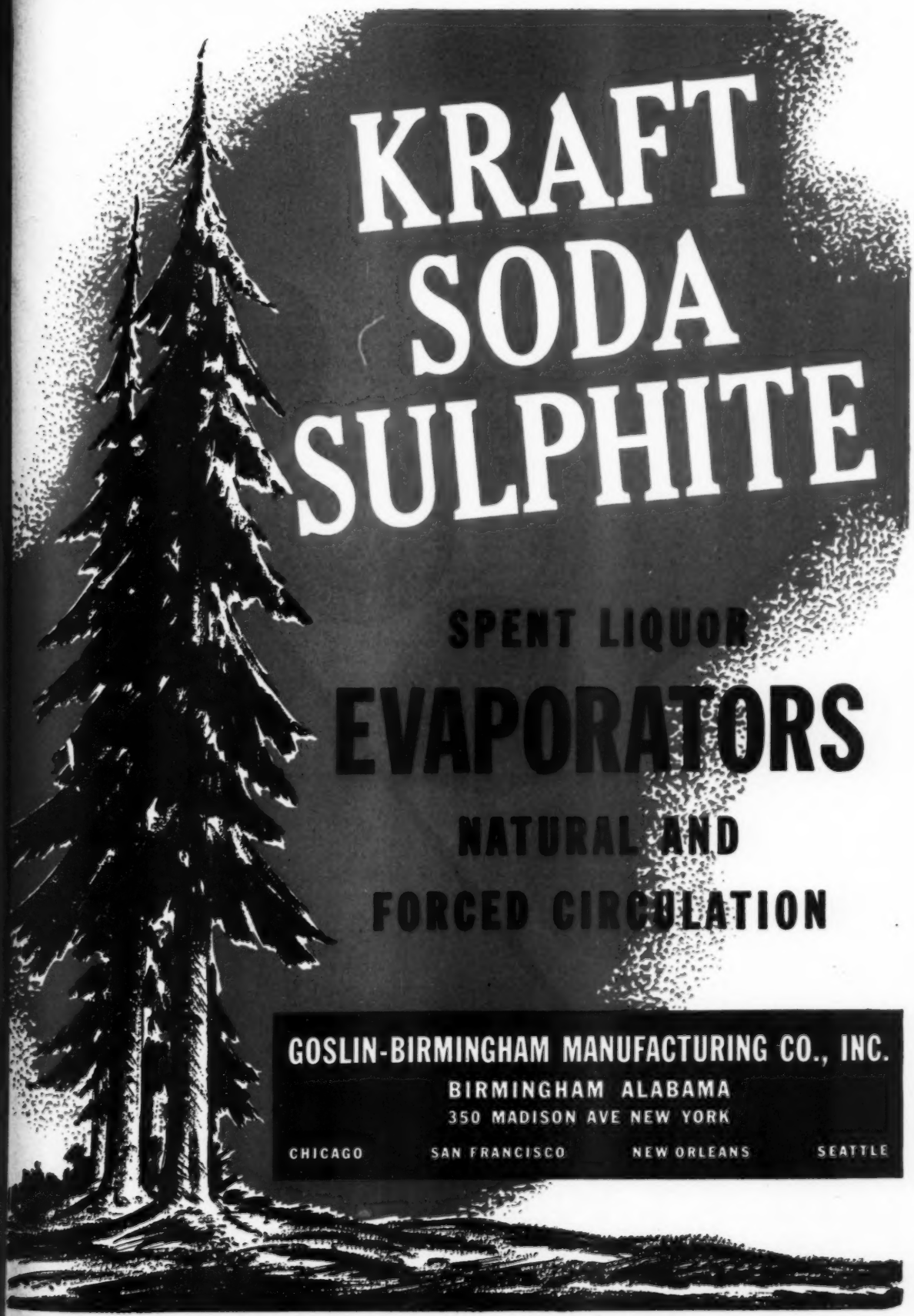
The property involved consists of about 72,000 acres southeast of Lake Okeechobee which the company originally acquired for agricultural purposes.

◆

HAWLEY CO. BUYS LEASE FROM CROWN CORPORATION

On January 23, announcement was made that the Hawley Pulp & Paper Company, Oregon City, Oregon, has purchased leases on Mill H in Oregon City, from the Crown Corporation.

It is understood that the mill and it appurtenances have been sublet from Crown by the Hawley company. The transfer diverts the Crown Corporation of all interest in property rented from the Portland General Electric Company east of the center line of the Willamette River at Oregon City. Crown's rights in a 25-yr. lease from P.G.E. for water to generate 2,172 horsepower were protected in the Hawley agreement.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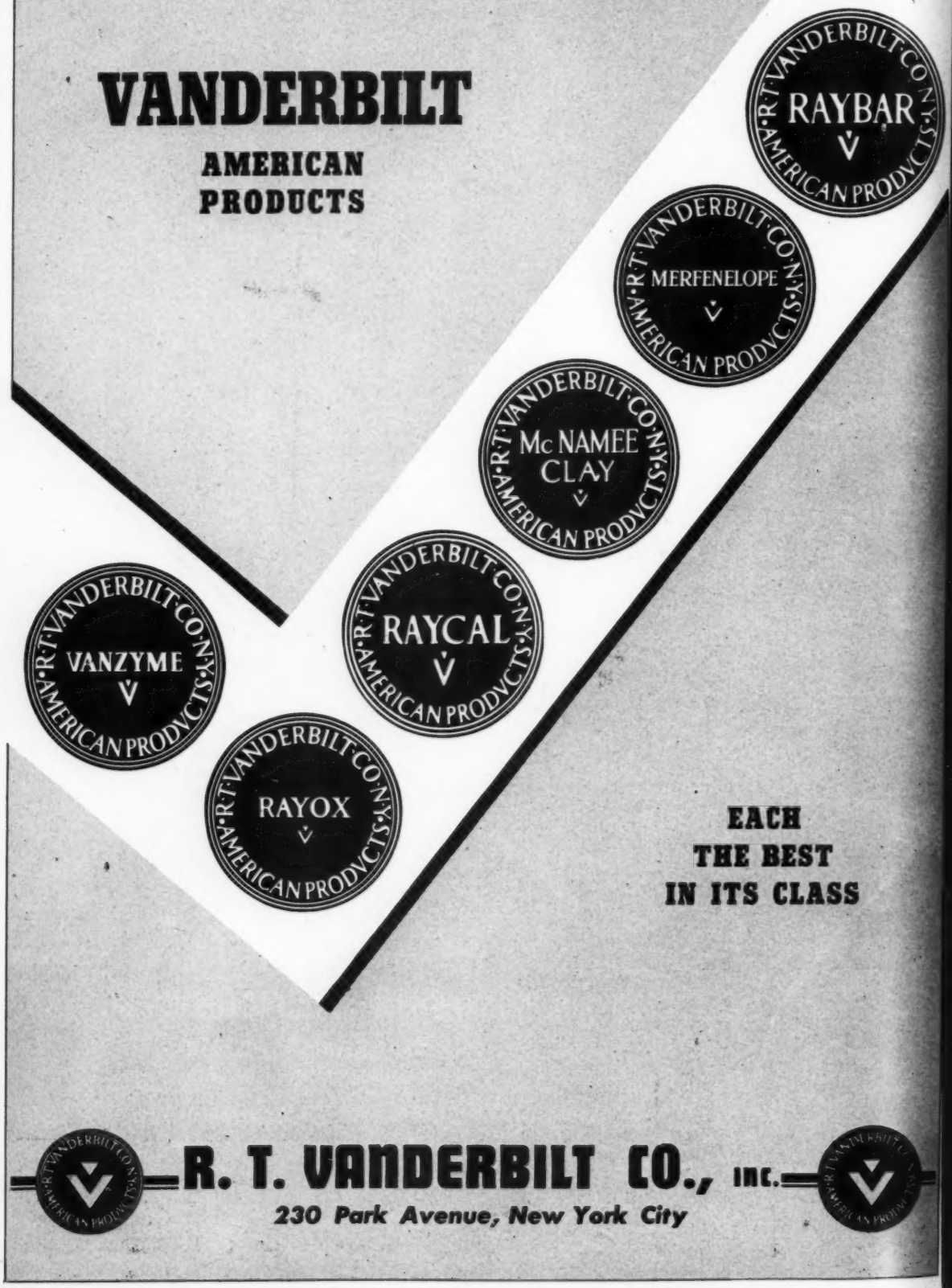

EACH THE BEST IN ITS CLASS

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

Editorial

A Paper Crisis

▶▶▶ AT VARIOUS TIMES during the past several years, the effects of governmental regulations upon the paper industry have been discussed in this column. It has been pointed out that such regulations would bring about curtailment of production, a shutdown of some of the mills, and a liquidation of some of the industry's operations without recourse.

The industry already has witnessed the first two phases, namely, curtailment of production, and mill shutdowns. Now it is looking the liquidation phase bang in the eye.

Perhaps, the statement "liquidation without recourse" needs a little explaining. In brief, it simply means that the Government, through the application and enforcement of its regulations, would create a condition which would compel some mills to liquidate. In such liquidation, although occasioned by compliance with government regulations, there would be no opportunity to recover losses.

Singly, by twos and threes, and in groups, the paper producers have pilgrimaged to Washington, setting forth their distresses and pleadings for relief, but with what results?

When some of the adverse workings of the regulations were pointed out, they were not denied but rather through inference the question was asked, "What can be done about it?"

What is the paper industry going to do about it?

May it be emphasized that without paper there can be neither war nor civilian activity.

Activity is the distinguishing differential between the living and the dead. To keep the nation alive, it must have an abundant and continuous supply of paper. Paper is both essential and indispensable.

However, the rules, regulations and directives put forth from Washington to control paper production menace the paper supply. For instance, some of the OPA ceiling prices upon paper products date back to October, 1941—well over three years ago. Yet, in the meantime, paper production costs have risen continuously, thus compelling the producer to absorb the loss. In addition, taxes have been hiked upward by leaps and bounds.

As a result of these things, two conditions have developed to cripple the service of the paper industry in the war effort. First, certain marginal mills dropped out of the production picture due to non-profit operations. Second, with the rapid increase in demand of paper for war purposes, at the close of last year, 75 per cent of the total over-all paper production was required to meet it—such a tremendous tonnage on the basis of frozen prices and liquid costs.

A third condition apt to develop is the possible curtailment or complete shutdown and liquidation of some large operating units because of non-profit operations.

The OPA theory seems to be that a business can run without making a profit. For when a producer approaches the OPA with figures showing that he is operating in the red on various items, he is told that he can submit revised prices, limited only to manufacturing costs, but including no administration, overhead, sales, advertising expense, or profit. Such an attitude breeds but one outcome—less paper.

Another situation that may make for further curtailment of paper production is the possible regimentation and even conscription of all men between 18 and 45 years of age, including the 4-F's. If this plan is made effective, men from the forests and farms, formerly exempted, would be called up for induction. This was advocated in the face of the known critical shortage of men to cut wood for pulp and paper production.

In addition, in January of this year, snows, rains, storms, and floods took a terrific toll from the meager woods operations. Pulp production of necessity has been decreasing while the demand for critical paper supplies grows daily.

A crisis in the paper situation looms immediately ahead. It is hoped that it may be averted and that Washington, the industry, and various allied groups working together will find a way to increase the supply of pulpwood.

Major Interests of Your Employees

▶▶▶ HAVE YOU EVER MADE any effort to determine what your employees think of their job, their bosses, and perhaps of you?

An item in the December 2, 1944, issue of Labor and Management News, Official Publication of War Production Drive, War Production Board (Washington, D. C.), revealed the results of a survey made in one of the larger war plants recently. In that survey, 1,311 new employees were asked to check the one factor of employment which they thought was the most important to them.

The tabulated results are shown in the accompanying table.

From the results, it appears that most men and women are primarily interested in being employed steadily on jobs where working conditions are safe.

Would your employees respond in this same manner? If you do not know, it might be interesting and helpful to find out.

	Men	Women	Total
Safe Working Conditions	343	124	467
Steady Employment	136	73	209
Training	130	68	198
Chance of Promotion	113	50	163
A Chance to Use Own Ideas	52	39	91
A Good Boss	42	18	60
Fair Hearing of Complaints	25	15	40
Hours of Work	26	13	39
Pension and Insurance	21	3	24
Amount of Pay	16	4	20

Current Thought

WILLIAM SIBLEY

In the Army — Mail is Spelled M-o-r-a-l-e

▶▶▶ IF YOU THINK THERE ARE too many radio pleas to write the G. I. Joes and the G. I. Janes . . . if you are sick and tired of being prodded to write V-mail letters to your friends, relatives, and acquaintances in service . . . the chances are nine thousand to one you have never been a soldier overseas. And, if you are one of those rare birds who can meet such odds, the chances are seven trillion to one you were one of those extremely rare birds who always received a flock of letters every time mail was delivered to your company.

Speaking in the vertical pronoun, I experienced that feeling of waiting expectantly for the Top Kick to call my name when he was passing out the letters—only to be "forgotten" and have nothing to do but go back to my pup tent and roll another cigarette. The feeling a soldier has, when he is several thousand miles from home and has received no letter at a time when everyone else, it seems, gets a whole handful—isn't pretty. In this space I won't try to go into that—but take it from a buck private in the Engineers of World War I—*write letters and more letters to the guys and gals overseas.*

Now what are you going to tell the fellows abroad? Are you going to say that little Susie has the measles; that Annabelle has worried so much about the war that she has lost nine pounds; or that Mother fell and broke her hip? Let's hope not. All such petty incidents serve no good purpose; indeed they act as a boomerang, and for the boy who is conscientious about his family they only load his mind with worries and undermine his ability to be the best soldier. When writing, are you going to complain because you can't get gas enough to drive out to Aunt Lizzie's farm; that the cigarette shortage is so bad you have had to change from your favorite brand to another; or "they say here that General MacArthur is very unpopular with the boys?" For the love of Victory—No! The weighty troubles of cigarettes, trains and bussses crowded with nonessential travelers! a gas shortage which restricts pleasure driving; and unfounded gossip regarding military affairs are things which gripe the fellows rather than encourage them.

Our men in service want to know the little things which make up the life they left and are fighting to return to. They are interested in familiar, though seemingly inconsequential, things such as: Where you ate lunch, and what you had for dinner last night . . . Someone you saw today or yesterday that your soldier knew and what you talked about . . . Some new jokes that might be repeated and cheer him up a bit. That man in service wants to hear whose birthday came along recently and what was done about it . . . He is interested in the neighborhood gossip about his old friends. Newspaper clippings are welcome reading to our boys—they would even be interested to know what the tax reduction was from your last pay check (sans gripe from you)—or who had been arrested lately; who plays the best game of gin rummy, or—yes, which new wife is going to have a baby. He wants to know something of the production of the old mill; about the overtime you are putting in; how both mother and sis are working at Red Cross in the basement of your home church . . . and what happened to that nice little dog the neighbors owned.

Here's a suggestion to help out your correspondence with soldiers. Keep envelopes addressed and stamped for them. Then from time to time, drop in clippings, cartoons, or little personal notes. No need to wait until you can write a "long" letter. Frequently the spontaneous memos representative of passing moods are more to be appreciated than a letter with studied continuity. One mother I know with two sons in service, one of whom was especially addicted to a particular newspaper cartoon strip, cuts out those strips and sends them once each week, in the order of their publication. Such a *little* thing to do—and yet half the fellows in that lad's company are now following the adventures of that cartoon character.

Letters which have news, humor, and good sense become live ammunition for your fighting forces. And there's no fooling about it—if all of us really *were fighting*—we would write more *fighting* letters. There are some things which gripe me (in *this* war, just an ordinary citizen) to tears. First and foremost are the folks who say: "Oh, I haven't time to write the fellows. You'd be surprised how little time there is left in my day!" . . . or . . . "Well, I *did* write a letter a few weeks ago, but I didn't get an answer from him!" Holy Smokers! While I wish such people were forced to do some real fighting, yet I sometimes think they would be a disgrace to the uniform . . . Those are the people who think they are *entitled* to use up the gasoline rationed to them—when their car, along with a couple of million others, should be up on blocks. They are the folks who, before they get on a train to attend a convention or a sales meeting should ask themselves the question: "In what way would the war effort be impaired, if I stayed home?" They are the folks who are worrying about postwar conditions long before the war is won; who think it might be okay to cut out horse and dog racing, but go blithely on buying gadgets, gee-gaws, jewelry, and fur coats. They also are the folks who gripe to high heaven about the surtax on their incomes, failing to recollect that in many other countries there are double the surtaxes, but no sir-tax.

It takes guns, planes, ships, ammunition, planes, tanks, and jeeps to win a war, and—look—the fellows who man them need letters. What are you going to do about it?

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YOU can be assured of maximum belt life, minimum power and maintenance cost, and dependable trouble-free service with Link-Belt Anti-Friction Belt Conveyor Idlers and other equipment.

Link-Belt engineers pioneered in the development of anti-friction belt conveyor idlers and have consistently improved the original, fundamental design—the grease seal, bearing adjustment, shaft mounting and the supporting stands and brackets. All with the result that today's Link-Belt designs offer the very best in belt conveyor equipment to keep production "On the Move" for Victory.

Link-Belt inclined and horizontal belt conveyor handling sulphur. Material is discharged to storage bins by means of a simply-designed movable plow shown in the illustration above.

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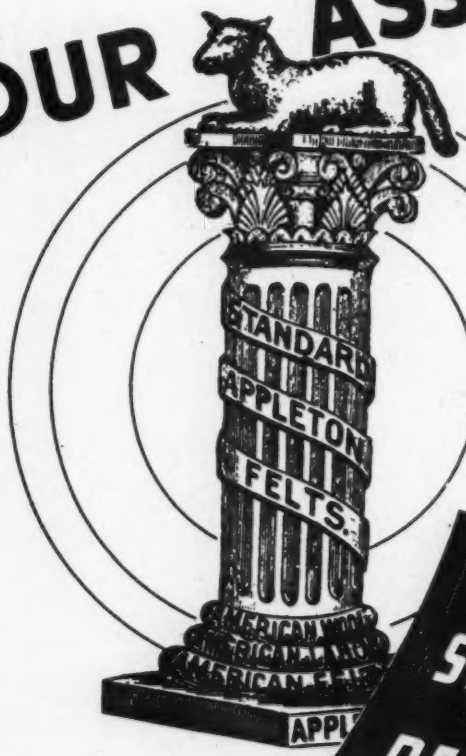
YOUR ASSURANCE



SERVICE
DESIGN
FINISH
UNIFORMITY
DEPENDABILITY

make APPLETON FELTS good paper

Appleton Woolen Mills

APPLETON • WISCONSIN

The Song of the BLUE SPRUCE

"Harken, men of Mosinee!
Listen, while we waft to thee!
The song of songs we ever sing
Winter, summer, fall and spring.
Our roots are burrowed fathoms deep,
Our branches up toward heaven
sweep.
From summer's sun and winter's snow
We gather sap and strength to grow
The cellulose we store for thee
Through Nature's wondrous alchemy.
Then by your craft you added fame
And gave the product your good
name.
So goes our song—we'll ever be
Nature's gift to Mosinee!"

The trees of the forest are the nation's most precious possession. They emerge from this global conflict as the universal raw material. From them every known commodity for the sustenance of man may be produced. There is no substitute for the forest products as basic raw material. MOSINEE, always a particularly high grade forest product, continues to serve the nation in war with the same fidelity as it did the civilian economy in peace. It is our earnest hope that when hostilities end, and the demand for excessive tonnage for war purposes ceases, that we may resume our place as a supplier of superior forest products in a new and better peace time era.

THE
MILLS
OF
MOSINEE

Hand Papermaking *in Occupational Therapy*

HARRISON ELLIOTT
The Stevens-Nelson Paper Corporation

PAPER HAS BEEN my vocation for many years, and papermaking my avocation for more than a decade. My papermaking experience began when the Eynsford mill in England shipped to my employer, The Stevens-Nelson Paper Corporation, several items of equipment to demonstrate the making of paper by hand and to further the interest in handmade paper in this country.

After this equipment, consisting of a small beater, a vat, felts, and a press, had served its original purpose to advertise the product of the mill whence it came, I fell to experimenting with it on my own account and was pleased to have my papermaking develop into a practical hobby. With some practice I discovered that I could make a fairly good sheet of usable paper from discarded bed sheets, and friends of mine who had private presses printed limited editions of keepsakes on the paper I thus produced.

One day an artist friend brought me some heavy, tough, unbleached Belgian linen, and after many hours of beating, I cast the pulp in sheet form and was surprised to get a unique mottled color and fiber effect. Some of the paper was used for water-color painting and other sheets for hand bookbinding. The paper was remarkably strong, and when pasted down on binder's board, made most durable and decorative book covers.

This experience with unbleached linen led me to try colored cotton rags without benefit of bleach or dye. Some interesting and unusual color, fiber, and marbled effects were obtained, and when I showed my handiwork to my friends I was showered with worn-out pajamas (both genders), sun suits, slacks, knickers, overalls, smocks, and even boy and girl scout uniforms that had performed their good deeds and were on the way to the rag bag.

Came the day when my one-man paper mill was visited by Mrs. Charles Suydam Cutting, whose estate at Gladstone, New Jersey, is largely given over as a Merchant Marine rest center. Mrs. Cutting was quickly impressed with the idea that hand papermaking could be used in occupational therapy, a subject in which she was deeply interested. She saw that it would give the recuperating merchant seamen a manly craft and the means to create something useful by way of diversion.

Mrs. Cutting gave me generous financial and other assistance in setting up a small mill in one of the spacious box stalls in a large stable and coach house on the estate. An adjoining box stall was fitted up as a rag room and drying loft. In this stall, a legend on the wall reads, "Paper begins where many things end—in rags!"

Although this modest little paper mill was born in a box stall, it stands in a somewhat palatial setting. At one time, the two-story building housed two hundred blooded horses, equipages and many employees. The Harrison Farm estate of Colonel and Mrs. Charles Suydam Cutting covers 6,000 acres spread over a beautiful, partly wooded and rolling countryside. It offers ample means for rest and relaxation for those seamen who wish to roam about or to make use of the indoor swimming pool, tennis courts, library, and recreation rooms.

In January, 1942, the stable building of the estate was converted into a hospital and became the first civilian defense hospital in the United States. A few months later the building became a rest center for disabled merchant seamen, under the jurisdiction of the United Seamen's Service of New York, a division of the War Shipping Administration.

Seamen who wish to occupy themselves with creative work can use the facilities of the commodious workshop where a large, well-equipped room is devoted to many kinds of handicraft under the supervision of the Arts and Skills Committee, the Somerset Hills Chapter of the American Red Cross. The success and interest in occupational therapy maintained here is the result of a carefully planned program originated and established by Mrs. Cutting and ably executed by the members of the Arts and Skills Committee.

In the small-scale paper mill the entire process of making paper by the hand-mould method is carried out. Much interest in the craft of papermaking has been created here—the men marvel at the simplicity with which a serviceable bit of paper can be made. In the little mill gather seamen who have been to all parts of the world and who in their time have worked at many different callings. Some have been employed in paper mills, but so small has been their part in quantity production that they were often ignorant of much of the technique, and they have listened with rapt attention to discourses on the history and descriptions of just what paper is and what takes place when a sheet of paper is formed.

There is a never-failing interest in that formative step in the process

The Duke and Duchess of Windsor visit the paper mill in the Merchant Marine Rest Center at Gladstone, New Jersey, and look on while a sheet of paper is made for them by Harrison Elliott, instructor in papermaking.

where the pulp is dipped up by the mould and couched, or deposited, in its watery state on the felt in sheet form.

In the "vat room" there is an exhibit of much significance. Framed and behind glass is a large sheet of paper with a curious fiber effect in its composition, upon which is mounted a smaller note-size sheet and envelope. Tucked in the envelope is a cuff of the shirt from which the paper was made. This is the first paper made in the mill; it is dated April 17, 1943, and bears the quotation:

"Take that material which lies nearest,
Make of that thy work of art."

Surely nothing could be nearer to a man than his shirt, and when it leaves him—of necessity—it is well to know that it still has a usefulness, and that the parting with it is not final. Thus is written the saga, "New sheets from old shirts."

There is a surprising amount of interest shown by seamen who have survived torpedoings, bombings, gunfire, and exposure, and who are recovering from injuries and shattered nerves. They have found in hand papermaking a suggested vocation to which they may turn after the war. Some of them declare they intend to make their own equipment and take it up on a small scale in the home as a hobby. One seaman said he had an idea for building a small beater which he hopes to market.

The working of the beater seems to have a particular fascination and the remark is frequently made that one could be easily constructed, but, of course, that is the thought of the more mechanically-minded. In making paper by the hand process, it is not necessary to follow the tempo of a machine. The work may be done with restful pauses between steps in the process and the expenditure of energy may be controlled. Furthermore, no dangerous tools are required; all of these advantages are very desirable in occupational therapy.

Who knows but that hand papermaking may become a *cottage industry* after the war when some of the men quit the sea for less hazardous pursuits on land. Meanwhile, the little mill at Gladstone, with seamen at the vat, turns out colorful sheets for printing, hand bookbinding, portfolios, scrap books, correspondence sheets and envelopes, greeting cards, etc.

All of the paper made in the Gladstone Merchant Marine Rest Center mill is of honest cotton and linen. Frequently, a seaman's shirt that has seen long service and won honorable discharge is cut up and thrown into the beater finally to come out as sheets of paper. Literally, a man may give his shirt to write to his wife or sweetheart. Whether he wishes it or not, the paper will have lasting qualities and not be like that which Hansard deplored when he said, "A favorite love letter written upon it will endure but a few foldings and caresses, and prove as fragile as the vows it contains." The Gladstone paper is of sterner stuff, and it is hoped such avowals of love and loyalty the seamen may choose to make on it will be as lasting.

As these seamen come and go, they will doubtless carry away with them to all parts of the world a better understanding of paper and the importance of the industry. For the younger seamen in search of a vocation after the war, it will offer much in the way of suggestion and lay the foundation for a more intensive study to fit them for an essential and interesting industry which is constantly expanding and increasing its scope, and in need of new blood to carry on.

Verily, a hobby takes its place in therapy and becomes an aid in vocational guidance.

Safety Color Code

▶▶▶ JUST AS IN 1927 the colors used in traffic lights were unified on a national scale through the work of the American Standards Association, so the Association has today worked out a safety color code, drafts of which are now being circulated to industry for criticisms and suggestions. Purpose of this code is to unify on a national scale the colored markings used to serve as a warning to employees of certain physical dangers to be avoided, to mark the location of safety equipment, and to identify fire and other protective equipment.

The job was undertaken at the specific request of the War Department, but it also has a wide application in industry. Neither the War Department nor industry intends to use color markings as a substitute for adequate guards or other safety measures but to supplement them. The War Department in particular has a serious problem of safety. Quartermaster depots are scattered all over the country moving and storing huge quantities of everything that the Army needs. Fires or accidents in these establishments may hold up vital shipments to the fighting fronts. Moreover, since the personnel of these depots is relatively untrained and soldiers are frequently shifted from one depot to another, the value of standardization between depots assumes great importance. Because of the interchange of operating personnel between companies, industry has the same problem as the War Department.

They say that the first 30 seconds after a fire starts is the most important period in fire fighting, hence the use of color to identify fire fighting equipment. In fact, there is a long history of the use of specific colors to prevent accidents. The chief job of the committee has been one of unifying on a national scale what has already been done, so that the meaning assigned to a color would be the same to employees of a garage in New York as to the workers in a boiler factory in Toledo, Ohio. The paint manufacturers in particular have pioneereed in use of color as a safety aid. Codes already set up by private companies have been studied and the psychological reaction to colors taken into consideration—for example, the association of red with danger—in the development of this new draft standard.

The American Standards Association itself already has approved a number of standards using color to solve a specific problem.

The American Standard for colors in traffic signals has already been mentioned.

Under the leadership of the American Society of Mechanical Engineers, a Code for the Identification of Piping Systems was approved as American Recommended Practice in 1928. This standard uses color to identify various classes of materials flowing in pipes.

Red for fire protection equipment
Orange-Yellow for dangerous materials
Green for safe materials
And when required—
Blue for protective materials (other than sprinkler systems)
Purple for extra valuable materials.

In 1941, an American Standard was approved which provides Specifications for Industrial Accident Prevention Signs and this standard, in addition to specifying the shape and general layout of these signs, makes definite recommendations concerning the color which each type of sign should have. Red is specified for danger signs, yellow for caution, and green for safety. Black and white are specified for directional signs.

Short-Circuit Currents in Industrial Plants

D. L. BEEMAN
Industrial Engineering Division
General Electric Company

▸▸▸ A SIMPLE ELECTRIC circuit consists of a source of electricity and a means of using it, connected by two conductors for outgoing and for return of load current (Figure 1). The amount of current that normally flows through the conductors is that which is required to operate the motor, light, heater, or other loads.

The conductors of an electric system are separated by non-conducting material which sometimes "breaks down" and allows the conductors to touch, or permits an arc to form across the break. When this happens, the flow of current is no longer related to the load requirement, but is limited only by the capacity of the supply source. Hence, a very high short-circuit current flows—a current which may vary from a few to several hundred times the magnitude of the normal load current (Figure 2).

It is important to remember that the magnitude of the load current is determined by the amount of work that is being done, and bears little relation to the size of the system supplying the load. However, the magnitude of the short-circuit current is practically independent of the load. It is directly related to the size or capacity of the power source. The larger the apparatus which supplies power to the circuit, the greater the short-circuit current will be.

These two currents are analogous to the flow of water in a hydroelectric plant, as shown in Figure 3. The amount of water that flows under normal conditions is determined by the load on the turbines. Within limits, it makes no difference whether the reservoir behind the dam is large or small. This flow of water is comparable to the flow of load current in the distribution system in the factory.

On the other hand, should the dam break, the amount of water that will flow will depend upon the capacity of the reservoir, and will bear no relation to the load on the turbines. Whether the reservoir is large or small will make a real difference in this case. This flow of water is comparable to the flow of current through a "short" in the distribution system. The load currents do useful work, like the water that flows down the penstock through the turbine water wheel. The short-circuit currents produce unwanted effects, like the torrent that rushes madly downstream when the dam breaks.

Short-Circuit Protection By Circuit Breakers Or Fuses

The flow of short-circuit current must be stopped in the shortest practical time, lest it damage considerable equipment, cause fires, or even cause injury to nearby personnel. Normally, circuit breakers, and sometimes fuses, are used to open the faulty circuit to stop the flow of short-circuit current.

These circuit breakers have two functions and two current ratings. The first function is to carry normal load currents, and, when necessary, to switch them (Figure 4). This function requires a continuous current capacity designated by the ampere rating on the nameplate of the breaker. Fused switches are sometimes used for this purpose also.

The second function of these breakers is to open the circuit to stop the flow of short-circuit current into a fault; in other words, to interrupt the short circuit (Figure 5). The ability of the breaker to open short-circuit current is given in amperes or kva and is known as the interrupting capacity rating.

The circuit breakers or fuses have a definite limit in their ability to interrupt short-circuit current, just as they have a definite limit in their ability to carry load current. The purpose of giving the circuit breakers an interrupting capacity rating is to tell the user how much short-circuit current the device can be depended upon to open safely, just as the ampere rating tells how much load current the breakers will carry safely. Not all devices have the same interrupting capacity for dealing with short-circuit currents, just as all devices do not have the same ampere capacity for carrying load current. Hence, the circuit breaker or fuse must be so selected that its interrupting capacity rating is not less than the short-circuit current which the system will deliver, just as it must have a continuous ampere rating that is not less than the current drawn by the load.

It is not possible to prevent short circuit entirely. However, by using breakers or fuses of adequate interrupting capacity rating, it is possible to minimize their effects on the system.

What Are the Effects of Inadequate Short-Circuit Protection?

When the short-circuit current delivered by the system is in excess of the interrupting capacity rating of the short-circuit protective device, i.e., the breaker or fuse, this protective device may not successfully open the circuit, and dangerous consequences may follow.

Because the possible consequences

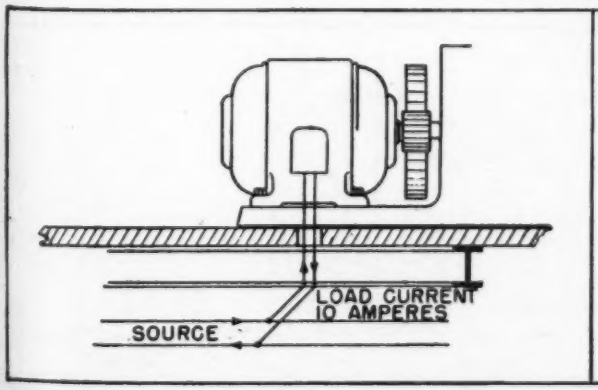


FIG. 1

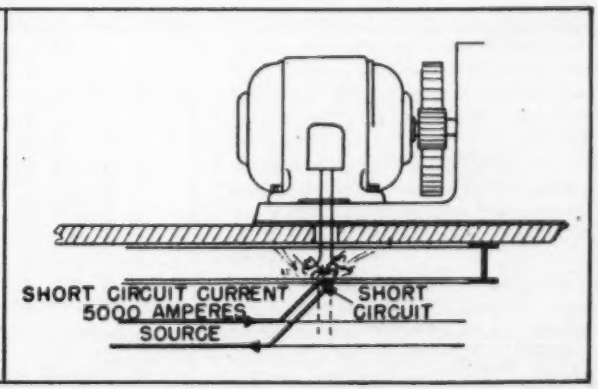


FIG. 2

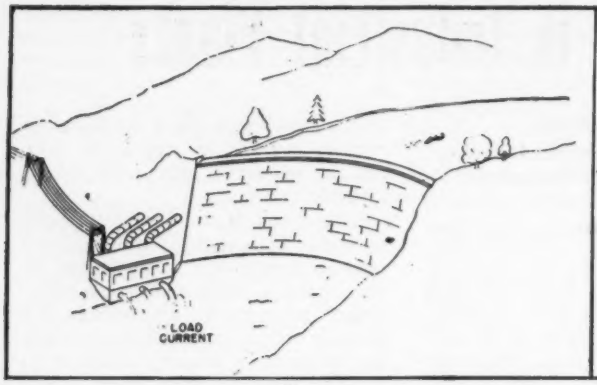


FIG. 3

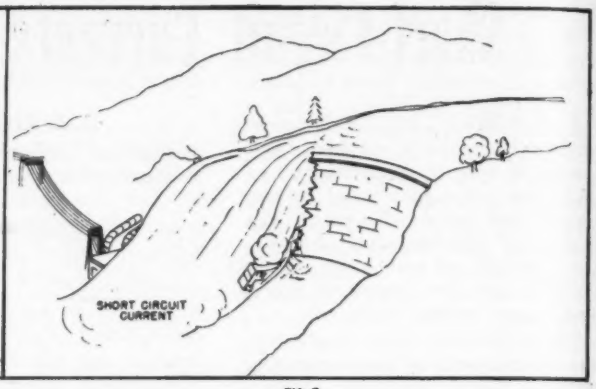


FIG. 3

of using breakers or fuses of inadequate rating are not always understood, inadequate devices are often installed without full realization of the risk that is being taken. However, inadequate short-circuit protective equipment is not only dangerous, but uneconomical.

Here's why the use of inadequate short-circuit protective equipment is dangerous: When the short-circuit device fails, a condition equivalent to a short circuit occurs within the device itself. This condition releases a tremendous amount of uncontrolled energy within the housing of the device and may cause intense heat or a violent explosion. This explosion may cause parts to be hurled about with high velocity, and may cause much hot gas to be emitted and spread over an area of several feet or more. In many old low-voltage systems (600 volts and below), inadequate oil-filled breakers are used. These breakers usually have a very low interrupting capacity rating, and when they attempt to open short-circuit currents beyond their rating, burning oil may be thrown over a considerable area, and a major fire may shut down the entire plant, destroy other equipment, and injure personnel.

Whether the short-circuit protective devices are oil-filled or air-type breakers or fused disconnecting switches, the fact that they do not provide adequate protection means danger for anyone who happens to be near when they fail. The result of such a failure is shown in Figure 6. Unfortunately, experience has shown that when a failure occurs, usually someone is near the device.

Here's why inadequate devices are not economical: When the device fails, the condition is equivalent to a bus fault and hence causes much more load to be shut down, with consequent loss of production. For instance, if circuit breakers or fuses of adequate interrupting capacity had been used in the feeder to Department C (Figure 7), the device would have opened the first short circuit on the cable to Department C, and other departments would not have been affected.

The following actual case histories show the results of inadequate short-circuit protection.

Case 1

In a New England plant a fault occurred on a motor circuit. The branch-circuit fuse (that is, the fuse in the circuit to the motor) which protected this circuit was inadequate, and consequently blew up and caused a fault. The main fuses between the source and branch-circuit fuse were too small and failed. The main breaker was also of insufficient interrupting capacity, and it failed, too. The fault was finally cleared when the power company's circuit breaker tripped open. In this case, the loss of production of the entire plant was caused by a fault that could have been confined to one small motor circuit. It shows how inadequate short-circuit devices can be a hazard to continuity of production.

Case 2

In a plant in the Middle West, one small circuit breaker of inadequate interrupting capacity failed. It spread carbon over the switchboard, thereby causing eight other breakers to fail within two weeks' time. Eventually, a new board with adequate circuit breakers was installed and no further difficulties were encountered. This plant not only lost production, but was obliged to buy two switchboards —loss of production and extra expense that could have been avoided if the original circuit breakers had been of adequate interrupting capacity.

Case 3

Circuit breakers of insufficient interrupting capacity were installed in a plant in the South. The users had

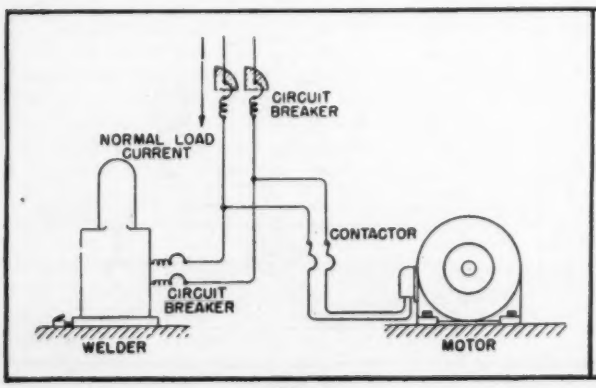


FIG. 4

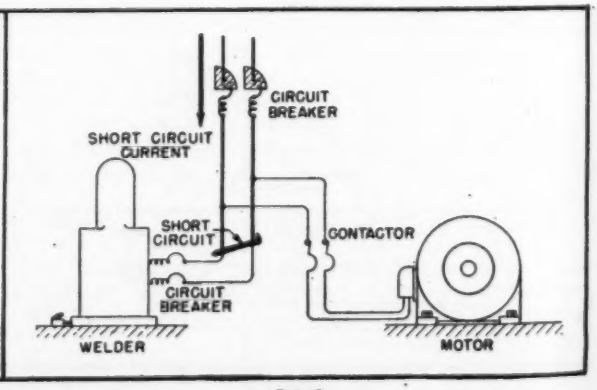


FIG. 5

Fig. 6—Burnt-out fused switch that was opened under load. Close-up view.

been warned that the breakers were too small. Within three years so many of them had failed on short-circuit currents that all of these original breakers had to be replaced with adequate ones. Was this practice economically sound?

Case 4

A certain plant was continually obliged to replace circuit breakers because they failed. The operators thought that these failures were a regular part of power system maintenance. When the plant engineer was shown that the circuit breakers were too small, he bought breakers with higher interrupting capacity. Since then there has been no circuit-breaker trouble. In this case, the lack of understanding the short-circuit problem materially increased the maintenance cost of the power system.

To have a safe power system with low maintenance cost and high service continuity, it is necessary to have adequate circuit breakers throughout the system.

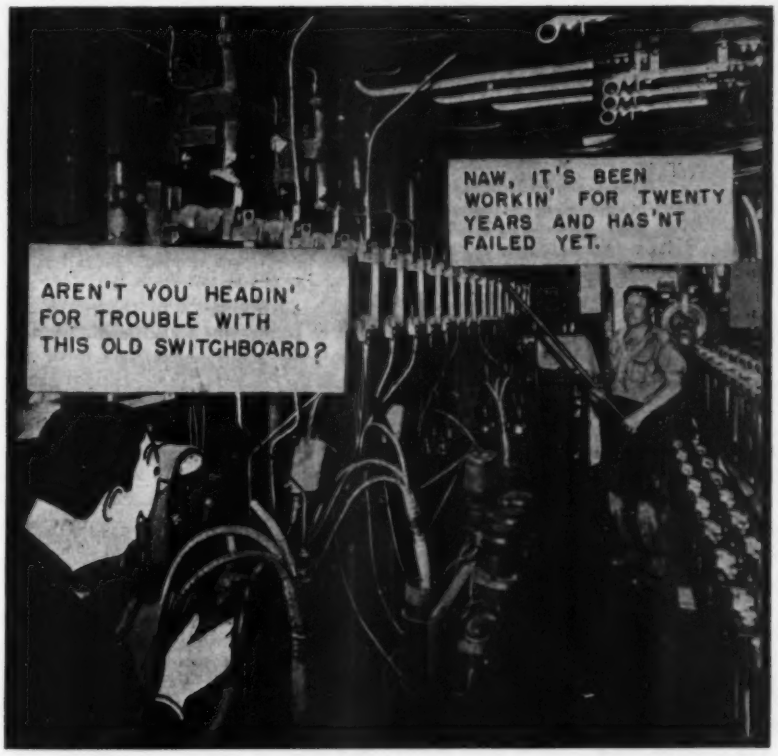


Fig. 8—The longer you use that old switchboard, the closer you come to being involved in a major catastrophe.

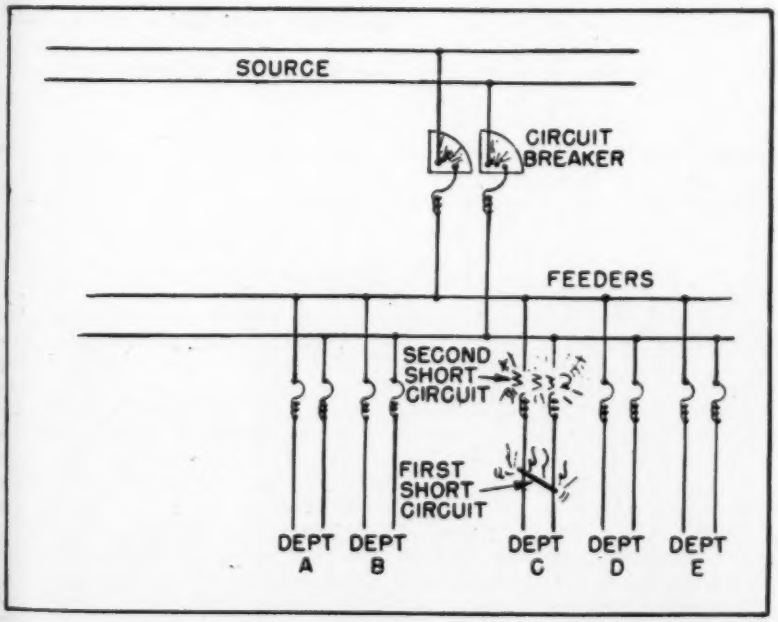


FIG. 7

How Can You Be Sure of Adequate Short-Circuit Protection?

There are certain steps which can be taken to insure adequate short-circuit protection in a plant distribution system. These steps are:

1. Accurately determine the short-circuit currents available. In the past few years we have learned how available short-circuit current can be accurately calculated at any point in a power system. The calculating procedures have been verified by many tests on actual systems and in short-circuit laboratories. Some former fallacious ideas, which lead to many installations of inadequate fuses and circuit breakers, have been dispelled. For example, the idea that only 20,000 amperes fault current could be obtained at 480 volts has been dispelled by actual measurements of currents of the order of 100,000 amperes at 480 volts.

If the plant operator cannot calculate these short-circuit currents, then his consulting engineer, or the utility company's engineer, or the application engineers of large electrical manufacturers can calculate them for him.

Several instructive articles which might be helpful have been published on short-circuit calculations. The method is not too complicated. Until the magnitude of short-circuit currents is known, it is not possible to be sure that the short-circuit protection is adequate.

2. Install only circuit breakers or fuses of known adequate interrupting-capacity rating. Devices of adequate rating can be obtained to meet the requirements of all industries.

Other factors to keep in mind, too, are:

Prepare For Load Growth— If the system is installed with circuit breakers that are only large enough for present requirements, the circuit breakers will become too small, from an interrupting standpoint, when capacity is added. The system should be designed, and the circuit breakers should be selected on a basis that will provide for expansion, without exceeding the circuit-breaker interrupting-capacity ratings. This expansion can be done at practically no added expense by employing a modern power distribution system.

Main and auxiliary switchboards in hundreds of plants in operation today were installed years ago when the plants were small. The power demand was limited then; therefore, small transformers were all that was required to supply the plant. The switchboards were probably adequate then, too. But as the plants grew, more power was needed. New feeders were added to carry the new load, and new transformers were added to the bus to supply the added load. In most cases, no thought was given to the breakers because they carried their load currents satisfactorily. However, when new transformers were added, the capacity of the power supply increased, and hence the available short-circuit current also increased. This higher short-circuit current would impose added interrupting duty on the old breakers if they were required to clear a faulty feeder cable. Often this added short circuit current was sufficient to bring the total short-circuit beyond the ability of those existing breakers. But, through oversight, nothing was done about it, leaving the plant vulnerable to a major shutdown if a fault occurred and one of those old breakers failed to clear it.

Failure to consider the effect of increased short-circuit currents has probably been the most common single cause of many of these older installations being unsafe from a short-circuit protection standpoint.

Don't Be Complacent (Figure 8)— Many systems which have been operating for years have never had a major short circuit. Operators of these systems have come to believe that short-circuits never occur, so do not bother about interrupting-capacity rating of breakers. This belief is comparable to the assumption that fire insurance is not necessary because the factory has never burned down. The older the system grows, the weaker the insulation becomes, and the greater the possibility of major short circuits. The breakers, too, are often inadequate in these old systems, and when a short circuit does occur, it is almost certain to cause a major shutdown, with possible damage to other property, as well as loss of production.

Physical Examinations of Employees

Old and New

WALTER A. GLEASON[1] and DR. JAMES D. STARK[2]

▶▶▶ THE PRE-EMPLOYMENT examination of persons seeking employment has been a basic principle of industrial medicine for some years. In the early days of such examinations they often were stereotyped and too routine. Sometimes they were used to keep applicants from obtaining employment, particularly applicants with hernias, markedly relaxed rings, defective vision, diabetes, epilepsy, and cardiac lesion. Perhaps the most pitiful of these cases were applicants who were suffering from *ambyolopia exampsia,* or undeveloped vision of the eye.

As the work and experience in industrial medicine continued, a new and perhaps more human attitude was formed. The pre-employment examination became the bases of placement of the employee rather than the elimination of the applicant.

The larger industries found that many of the older and reliable employees who suffered handicaps through illness or accident had been able to carry on and to do a good job. Typical handicaps of such employees included loss of an eye or leg, myocardial deficiencies, diabetes, and hernia.

Learning these things, it was but natural for industry to question why a new employee, although handicapped, if properly placed, would not be able to do as well. Handicapped applicants, therefore, were given jobs which it was believed they could fill satisfactorily and the results proved that they could.

Today, when a handicapped person is employed, it is important that the mill superintendent and the foreman under whom the new employee is to work receive a report on the new employee's physical condition. The report also should state definitely the type of work that the employee is physically able to do, and it should point out that the employee should not be transferred to a different kind of work without consulting the medical department.

This consultation with the medical department, previous to the transfer of a physically handicapped employee to a different kind of job, is very important. The first interest of a production department in an employee is what he can produce and not what is the employee's physical condition. Precaution, therefore, is necessary to prevent misplacement.

The medical department also should schedule regular monthly, quarterly, or semiannual physical re-examinations

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of employees. These examinations make it possible to observe how well the physically handicapped employees are standing up under the stress of their work.

It also is essential that employees of advanced age should be referred to the personnel and medical departments at the first notice of any slowing down due to illness or to inability to carry on their regular jobs.

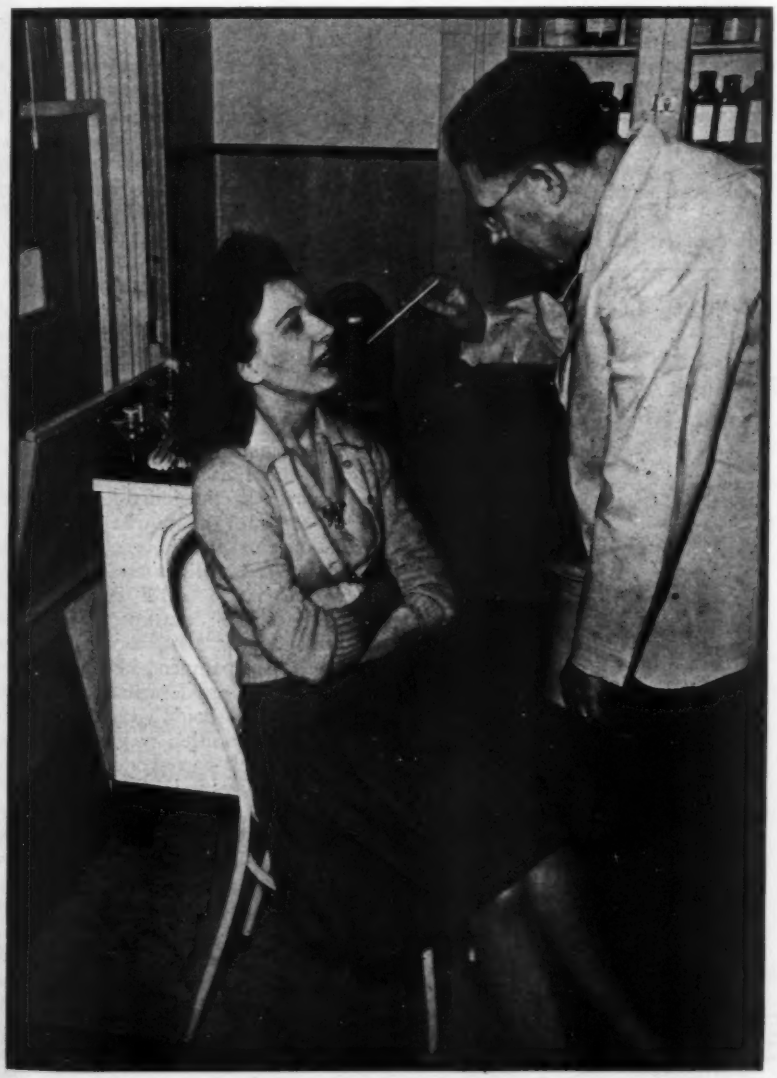
Fortunately, those mills with medical departments that have progressed in their functioning prior to World War II have gained experience that should be of much advantage in the handling of former employees who have been discharged from the armed forces.

To properly place these veterans (some of whom no doubt will be handicapped) as well as new employees, is going to be a big job. To expedite this task, a job study of all the work in a mill should be made now. Every job should be classified as to activity and effort required. With this advance information it will be possible to place these returning veterans and others in work which they will be able to do.

Naturally, it is hoped that the number of crippled, disabled, or nervous cases to be handled by the individual mill will be few in number. Yet, even the apparently normal veteran deserves more than a casual "Hello, glad to see you back at your old job."

In the re-employment of these veterans, a complete record should be obtained of each person's military service, combat experiences, illnesses, injuries, and last, but not least, mental reaction.

Will the veteran back from the war front desire to return to more or less routine work? Such work may have been suited to the employee previous to his war experience, but then it may be monotonous or tiring. If the veteran has been under great stress or strain, if his nervous system is not as stable as before, can he resume work requiring constant agility or exposure or to noise?



Each case should be studied and classified before an assignment is made. This work may not be accomplished in one interview. However, proper job analysis and team work between employment, medical, and safety departments should do the job.

Much understanding is going to be required in the consideration of handicapped veterans. For example: Suppose the veteran formerly worked in the millwright shop but now is without one of his limbs. Certainly, work in the millwright shop in the usual sense is no longer suitable to him.

Maybe the veteran has lost the vision of one eye and has only partial vision in the other. He can no longer operate a paper trimmer.

Perhaps the veteran's face and hands have been scarred. He no longer will desire to resume his place as a watchman at the entrance gate.

A job survey, however, will indicate any work where men with such handicaps can function to best advantage.

Again, in the hiring of returning veterans it is necessary that the supervisory force be acquainted with the defects of each individual. Likewise, the supervisory force should be cautioned against pushing the returned veteran too strenuously at the start and against making any reference to the employee's handicaps. Yet, these handicaps must be respected in work assignments.

Repeated medical checkups of a handicapped-veteran employee should be made to make sure that the rehabilitation effort is not lost through some misunderstanding of the employee or supervisor. These checkups, however, should not be so frequent that they take on a sympathetic or condolent form.

One of the most important functions of all industry and business is to place as many as possible of the returning veterans in useful and gainful employment.

If the individual firm waits until application is made by a veteran before considering the problem, not only will re-employment be retarded, but also the future of some of these veterans will be greatly handicapped.

Pre-employment or re-employment examination should be used to its full value.

Job analysis and a preplanned medical and employment program based on fitting the worker to the job is a deserving postwar planning function. It should be arranged for *now*.

Paper Mill Purchasing Routine

H. M. GRASSELT

▶▶▶ ALL FUNCTIONS and activities of a paper-mill purchasing department requires careful planning and supervision.

Purchasing routine may vary with different mills as purchasing must be synchronized with specific local requirements. Yet, there are certain fundamental rules of purchasing routine that are applicable in every mill.

Only a few simple forms are required to establish clear-cut records of all transactions. Among the essentials would be forms to cover requisitions, requests for quotations (price inquiry sheets), purchase orders, and follow-up letters or cards.

In addition to these forms, there must be a list of purveyors with detailed information concerning their respective products, as well as data covering special quotations, markets, and other related subject material. Reports and forecasts on market situations, for example, are very essential to orderly and efficient buying. Likewise, the proper filing and indexing of manufacturers' catalogues to make for ready reference is a great aid.

Buying efficiency must not be destroyed or adversely affected by red tape. Perhaps it should be emphasized that records, forms, etc., are only tools of purchasing.

Other aids in buying would include charts that illustrate graphically price and consumption information, and materials control and inventory data.

The Requisition

The purchasing procedure must start with the requisition which must show all essential details pertaining to classification and description of the required commodity. This information must be accurate in every respect. Accuracy of statement precludes unnecessary requests for additional details and prevents costly errors. Inaccurate descriptive material or incomplete specifications, on the other hand, may result in the purchase of materials and supplies that cannot be used for the purpose intended.

The buying of standardized materials and supplies should be emphasized. The buyer knows the sources of supply. He knows the quality of products of different manufacturers. He also knows with what promptness deliveries can be expected from the potential suppliers.

A requisition must show the date the goods will be required and the department or job for which they are needed. In the case that a job is designated, the job order number also is needed.

Ordinarily, a requisition must be signed by the department head and approved by the superintendent or manager. However, a requisition for a small quantity of supplies, involving just a few dollars, should be accepted by the purchasing department with only the foreman's signature.

Co-operation of all departments in a mill is very essential. Foremen should be instructed as to proper procedure of requisitioning. They should be impressed with the necessity of submitting requests in such a way that orders can be placed by the purchasing department without delays and without danger of making mistakes.

The purchasing department of a mill without a stock control system, upon receiving a requisition, should make sure that the desired material is not on hand. It may happen that the master mechanic or foreman failed to check over the stock on hand. It also is possible at times to utilize satisfactorily something on hand even though it is not of the exact specifications as covered by a requisition. A checkup procedure of this kind will reduce the ordering of unnecessary or surplus materials to a minimum.

Purchase Order

The number of copies of a purchase order to be made depends upon methods used by the individual mill and the setup of its purchasing routine. The original in any event goes to the purveyor. Usually, there is a copy for the materials control department, a copy for the department which ordered the supplies, a copy for the receiving department, and a copy for the purchasing department. To this latter copy should be attached the original requisition as well as carbon copies of all correspondence pertaining to the respective order.

The advisability of giving a copy to the receiving department is often questioned. This copy is very essential to the smooth functioning of that department. The copy should not show purchase price and terms but it should furnish the receiving clerk with such details as needed to expedite his work. If this information is not made available to him, he is forced to do a lot of guessing or much extra

BLANK PAPER COMPANY

No..... Date:.....

REQUISITION

Units	Description	Remarks

Required:..... Charge to Job No.....
" " Acc't.

Approved: (Signed).....
Dept. No.

(Carbon Copy retained by the respective Department Head; a copy of the Purchase Order will be sent him when order has been placed)

work to find out where the material belongs when it arrives and how to make out his report. In fact, without this information, his receiving report would be incomplete. To make it complete would take a good deal of his time to ascertain the facts. In so doing, he would waste the time of other people from whom the information could be obtained.

Incoming goods have to be weighed or counted. The information supplied on the copy of the purchase order makes it possible for the receiving clerk to make a quick comparison of an incoming shipment with the order and in this way to expedite the handling of it.

The order placed with a purveyor should be comprehensive. The specifications should be clear. Likewise, the price or prices agreed upon, terms, and delivery date should be stated accurately. If sufficient care is taken in writing up an order, errors and extra correspondence will be avoided or at least reduced to a minimum. (For the duration of World War II, the various certifications together with priority numbers, rating, etc., must not be forgotten.)

A purchase order represents a contract. As such, it has many legal aspects. For example, a definite delivery date may not be specified. The order, nevertheless, is valid. Delivery, however, must be made within a reasonable time which ordinarily is within one year.

Courts hold that where a buyer deals with a seller's agent that it is the buyer's responsibility to ascertain the authority of agent or salesman. Furthermore, higher courts hold that a contract issued to a salesman by a buyer does not necessarily obligate the salesman's employer. To be obligated, the salesman's employer must have informed the buyer to the effect that contracts entered into, guarantees made, and statements made by the representative would be binding.

An acknowledgment of the order, signed by the seller or authorized employee, will preclude any arguments that otherwise may arise under certain conditions.

Our Order No.

..... **Date:**.....**194**

Our Requisition No.:..... **BLANK PAPER COMPANY**
Blanktown, Maine

PURCHASE ORDER

.....

.....

.....

Kindly supply us with the following materials:

Charge to:
Blank Paper Company,
Blanktown, Maine.

Must be shipped:
.....**194**

Ship to:
Our address, Division No.

Via:.....**F. O. B.** .....**Terms:**.....

Invoice must be rendered in duplicate and mailed to our Purchasing Department

Shipping Notice must be mailed on the day shipment is made.
Terms and delivery to appear on the invoice.
We do not pay for packing or cartage.
Put a packing list in each package, stating contents and our order number.
All materials must be up to standard of sample or classifications and the quantity of the material must not be exceeded or reduced without our permission.

Blank Paper Company

Purchasing Agent

(A Carbon Copy of this order may be sent to the seller, together with the original, signed by him and returned as an Acknowledgment of Order.)

Following-Up or Expediting

With a definite delivery date specified on the purchase order, it is essential that the seller either indicate his ability or inability to meet it. If the date cannot be met, the seller must set another definite date and receive the buyer's approval of it.

Ten days or so before the promised or demanded shipping date, a follow-up letter should be written to the purveyor by the purchasing department. Such a letter calls the shipper's attention to his obligation and requests his co-operation.

If the shipment has not arrived within five days or so after promised delivery date and no invoice or shipping notice has been received, a telegram should be sent to the shipper and an explanation demanded. Sometimes a telephone call will do the job equally well if not better.

Whenever a new delivery date has been promised, it should be entered on a small filing card that will turn up four or five days previous to the date. At that time, another letter may be written to ascertain if the shipper is going to be able to keep his promise. There is a limit to this procedure, however, and follow-ups should not be endless.

Such a system may seem to the uninitiated to require a good deal of time. However, such is not the case. A form letter can be filled out quickly and there are not enough of them in a day to cause much concern to the employee responsible for handling them. It becomes a regular part of the purchasing routine and is handled accordingly.

Under prevailing conditions, many follow-up inquiries may be ignored by the seller. The purveyor may look upon them simply as a part of office routine or just as a nuisance. However, if consistent effort is made on the part of the buyer to obtain information, the supplier out of sheer desperation may finally supply it.

Incidentally, most purveyors with which paper mills do business realize that the war will be over some day, and that business will return to normal channels. These firms, thinking of the future, do not forget such little

courtesies as answering inquiries in regard to delivery dates.

In addition to these several factors of purchasing routine which have been touched upon so briefly, there is the human factor to be considered. There are many people, for example, who like a word of praise—a pat on the back—for service well rendered. An occasional congratulatory letter to a shipper who has been prompt in his deliveries and possibly otherwise attentive to the buyer's wishes cannot help but be appreciated and often develop close business friendships.

As a rule, a purchasing executive treats a salesman in the same way that he would like to be treated if their positions were reversed. Ordinarily, a salesman is seen as quickly as possible. It is far better if an executive knows that he is going to be unavailable for some little time to ask a caller to return at a specified time than it is to keep him waiting for an indefinite period. Occasionally, the executive may be involved in certain detail work that cannot be delayed readily, he may be required to attend conferences, or he may have other duties that do not permit him to see a salesman right at the moment that the salesman may like to be seen. Therefore, the salesman must learn to be patient.

The word "Service" should be the slogan of the purchasing department. Its service should be so good that other departments of the mill willingly co-operate and accept its procedures and policies.

Definite and clear-cut rules should be established by the management to govern and co-ordinate relations between the purchasing department and other mill departments. If this procedure is not followed, there is apt to be confusion resulting in errors and arguments. Such differences affect personnel efficiency and are a waste of time that otherwise could be spent to better advantage.

It should be understood by all mill departments and by all personnel that may in any way have anything to do with the acquisition of new equipment, materials, etc., that:

1) All inquiries for prices and all buying should be done by the purchasing department.

2) All correspondence with suppliers, except in specific cases where purely engineering and technical questions are concerned, must go through the purchasing department. Where purely engineering and technical questions are concerned, the correspondence should emanate from the engineering department or the laboratory as the individual case would determine but a carbon copy of each such letter should find its way to the purchasing department. In like manner, the purchasing department should send copies of certain correspondence to departments definitely interested in it.

3) Salesmen should see persons other than the buyer only upon the latter's request. If other departments find it necessary to interview salesmen on account of some special details, requests for such visits should be made through the purchasing department.

4) The purchasing department must be authorized to question the quality and kind of supplies requisitioned by the individual departments. Likewise, with the approval of the purchasing department, heads or members of departments should be permitted to buy supplies. The purchase orders, however, must go through the purchasing department.

5) The purchasing department must receive a report on every shipment of incoming materials (receiving report) not only for entry of the received items in respective purchase orders, but also to permit inspection of items before storing or using.

All adjustment negotiations must be handled by the purchasing department.

6) To prevent possible delays in securing supplies and parts in an emergency, the master mechanic should be provided with Emergency Order blanks. Such blanks permit the purchase of needed materials or supplies from local dealers.

Adherence of various mill departments to a few simple rules and regulations means smooth and efficient functioning of the purchasing department. This practice builds up the esprit de corps of all departments, eliminates friction, and enables the purchasing department to effect savings and to render good service.

No.:..... Date:.....194

BLANK PAPER COMPANY
Blanktown, Maine

REQUEST FOR QUOTATION

.....

.....

.....

Kindly let us have best prices and delivery dates for the following commodities, with terms of payment and other details.

Very truly yours
Blank Paper Company
P.A.

Units	Description of Commodities	Prices		Remarks

Prices must be quoted delivered Blanktown, Maine.
Return the original with your quotations and retain the duplicate for your files.
Your prompt attention will be greatly appreciated.

Ironville, Iowa. (Your Signature) **Solid Iron Works**
Date: **by:**

Stimulating Forest Fire Prevention

CHARLES A. GILLETT
American Forest Products Industries, Inc.

▶▶▶ IF PREDICTIONS OF postwar increases in production of pulpwood, lumber, and other forest products are to be realized, it becomes absolutely essential that uncontrolled forest fires be reduced to a minimum. This means that the approximately 130 million acres of forest lands in the United States on which forest fires are running wild yearly must be placed under organized forest protection at the earliest possible date. Protection also must be intensified on the 480 million acres of forest land under organized protection.

Even though progress in fire control in Southern woodlands has been noteworthy in the past decade, nevertheless the South still has 100 million acres of woodlands without any protection against fire. Room for improvement exists in all Southern states. In other parts of the country, many states now have all of their woodlands under intensive forest fire control. Modern forest management can aid in the growth of continuous crops of pine and hardwoods only if fire is kept out of the woods.

The solution of the forest fire problem lies chiefly in education. Every timbered state has the interest, if properly organized, to meet the forest fire situation. If public consciousness is aroused, then it will be a matter of a short time until state legislatures will find adequate financing for their state forestry department to do the job. The administrative problem of handling forest fire fighting organizations belongs to the Federal Government in the case of federally owned forest lands and to the state, and private associations in co-operation with the state, in the case of private and state forest land.

The pulp and paper industry has a great stake in the forests of America. In many sections of the country, and particularly in the South, pulpwood is obtained from every county within a radius of three hundred miles. Even to the pulp mill, then, the problem of the protection of the forest from fire is a state-wide or region-wide problem rather than a local one. Most pulp mills and other wood-using industries have already placed all forest lands owned by them under intensive forest protection. Practically all of them have purchased advertising space for forestry items. They have displayed posters and distributed thousands and thousands of pieces of forest fire prevention literature. Some busy executives have served on state commissions and boards. In spite of all of the good efforts, to date the surface has barely been scratched.

Forest fire prevention is a job for all of the people—few of whom realize the relative importance of fire prevention in good forestry and its ultimate effect upon reforestation. Aroused public opinion has been found to be the best antidote to unnecessary destruction of American resources. *Organization* and *Publicity* are the instruments of arousing public opinion.

In every state, many groups are interested in perpetuating forest resources through forest protection. If each interested group handles its forest protection public relations independently, duplication and "scattering of the shot" are bound to result. A state-wide central committee with a leading figure as chairman, a paid executive, and a series of county committees with volunteer chairmen appears to be the best type of organization. Such *Keep Green* Committees have been formed in Washington, Oregon, and Minnesota, and the results speak for them. The central committee should consist of representatives from governmental, professional, civic, and industrial groups, and could well include a representative from women's groups, veterans' groups, educators, labor, farm groups, federal and state forestry departments, and the forest industries. The central committee is thus a group of leaders who can be responsible for providing funds, act as liaison in securing the active assistance of their respective organizations, and support the association executive in the creation of committees, of approximately the same composition throughout the state, at a county and city level. The central committee produces the over-all plan of operations and the paid executive co-ordinates the execution of the plan in which all members of the committee are workers. The task is to explain to the people of the state that a major proportion of their forest fires can be prevented because they are man-caused. This impression can be created through publicity and advertising.

The pulp industry in any state will

LEFT—A southern woods thinned for pulpwood. RIGHT—A fire in a southern forest.

Fire prevention advertising available in mat form from American Forest Products Industries, Inc., without cost.

be helping its cause by actively backing any state-wide forest fire prevention campaign if under way or, in states where such a program has not yet been inaugurated, by taking the lead in the creation of a state-wide central committee.

The results of the 1944 pulpwood production campaign are sufficient proof of the value of advertising. Paid advertising gives its users complete control of the nature of a public message and the time and place of its appearance. It is a natural ally to other methods of disseminating information. Pulp mills can, either as a part of a state central committee program, or on their own, use fire fighting advertising copy to advantage. Sporting goods interests, transportation lines, travel bureaus, chambers of commerce, and development offices are all logical sponsors of paid fire prevention advertising. A pattern booklet of ready-made fire prevention and educational advertising available in mat form (see sample illustrations) is a service of American Forest Products Industries, Inc., and should be of real value in this program.

Many merchants are alive to the public service value of a good fire prevention window display. Posters, fire fighting tools, and equipment, enlarged pictures of forest scenes, small trees, and forest greenery can be used for an effective display. Stuffed wild animals and birds help catch the interest of the sportsman and enlist his support. Usually someone connected with a store will help put up the display if appropriate ideas and materials are suggested. An effective exhibit should be built around one theme. Display assistance frequently can be obtained from state forestry departments.

Radio stations are invaluable mediums for the distribution of forest fire prevention information. They may be used for three general classifications of information over the air—emergency announcements, spot announcements, and feature programs. Spot announcements are generally considered to be most effective for fire prevention. They are concise 50-150 word statements bringing out one point clearly. They are inserted between programs and do not consume much radio time. Their value lies in the fact that they can be repeated frequently during the fire season. Warning of fire danger weather, suggestions for preventing fires, and advice on good forest manners make up the bulk of the subject matter. Radio shows or feature presentations are good, but require considerable time for preparation and rehearsal.

Most newspapers want forestry stories, and many a good forestry story never reaches the paper. After all, editors require large quantities of forest products yearly and they have a natural interest in forest fire prevention. Stories on causes of fires, disastrous fires, actual fires prevented, periodic fire record reports, approach of fire weather, interviews with fire fighters, law enforcement cases, and special accomplishments of local citizens in fire prevention are a few items around which news stories can be developed. The addition of human interest elements and local color can turn many of these topics into good newspaper feature material.

Posters and other printed literature such as folders, fire prevention rule cards, slogan stickers, windshield stickers, automobile slogan plates, and many other forms of graphic materials can be printed at very little cost. All of the items are useful and will contribute to the general creation of a fire-cautious state of public mind.

Busy executives sometimes think that it is not necessary to tell people about the necessity of forest protection and other interesting facts about their mill or plant. There are plenty of opportunities for talks at civic clubs, chambers of commerce, fraternal groups, veterans' organizations, farm organizations, women's clubs, schools, etc., and a golden opportunity is lost if someone does not make a talk to such receptive and worthwhile audiences who can help in the drive against man-caused fires.

Any state with a forest fire problem can combat this menace successfully. When the public understands what forest fires mean, the problem of *Keeping America Green* will be largely solved.

Paper Converting Machinery—

Its Selection and Development *

MAX F. WULFINGHOFF and WM. C. WERNZ

▸▸▸ BLOWING OF AIR into a pile of sheets is occasionally resorted to in order to keep the material in motion. At the same time, the air may serve to accelerate seasoning, to equalize the moisture content, or to eliminate dust. Figure 2 illustrates a conveying device consisting of a perforated endless felt band connected to a suction duct and fan, while Figure 3 shows an arrangement of conveyors for feeding at several points.

Drying over belts may consist of either parallel single wires or of woven wire cloth. In the latter case, the cloth is woven to eliminate side travel. Edges of such woven wires can be reinforced by welding or soldering. Wires of this kind permit the product to be exposed to radiant heat or hot air, or to the action of a spray.

Canvas belts are customarily made of closely woven cotton duck which has been impregnated with stable oil compounds or wax. For effective saturation, a belt is impregnated under high pressures and temperatures. To prevent stretching in service, it is prestretched while the wax is still soft, and then dried under tension.

Belts of high tensile strength, possibly more than twice that of leather, are obtained by combining cotton duck and balata gum. Such belts are resistant to both moisture and steam.

Sometimes the product in process of manufacture slides on rails and is pushed forward by a chain or belt fitted with pusher dogs to maintain the proper spacing. The distributor for prefabricated pieces shown in Figure 4 uses a series of light flaps supported by a continuous chain. These flaps are released in the proper sequence by a key slot arrangement.

Proper arrangement of deflectors and superimposition of belt units makes it possible to extend the adaptability of this kind of moving device over wide limits.

Vibratory equipment is employed at times to maintain a flow of solids, particularly dusty or abrasive materials which might interfere with the continuous operation of bearings. Vibrated angular troughs can spread granulated material evenly over a conveyor belt with the particles moving in a straight line. Bin vibrators prevent arching of stored pulverized solids.

Supplies of emulsions or adhesives when volatile, usually are put in closed reservoirs. Water soluble substances on the other hand are commonly placed in open pans or pots.

Where sprays are used, the nozzles should be equipped with a check valve behind them. This feature prevents dripping which might spoil the product.

In the manufacture of photo papers, the undercoat usually is applied by flat brushes. The fineness of bristles in these brushes increases from brush to brush as the paper travels forward. In addition, the width of the brushes exceed that of the paper. The brushes move back and forth in a short reciprocating motion over the surface of the paper in a manner to render distribution more uniform.

Applicator rolls may be provided singly or in pairs (twin rolls) and application may be by dipping or by the use of an auxiliary roller (Figure 5). If application is by dipping (Figure 5a), the paper passes over a guide roller G which provides sufficient tension to hold the paper tightly against dripping roller D which runs idle and is partly submerged in the emulsion. The paper then entrains emulsion layer E. This method of application is simple, but should a clearance develop between paper and roller, some emulsion may force itself in between the roller surface and the paper and thus smudge the backside of the paper.

If application of the emulsion is by means of an auxiliary roller (Figure 5b), the additional roller D picks up some emulsion from the pan, and which, in turn, is entrained by the paper passing over roller C. The width of the emulsion can be defined clearly. However, a separate pair of rollers (C and D) is needed for each particular width of paper, and each set of rollers must be adjusted carefully. Too narrow a setting of the rolls damages the product; too wide a gap would permit the emulsion to fall through.

Supply pans usually are equipped with fountain rolls or transfer disks, depending on the relative location of reservoir and applicator. A mechanism for lowering the supply pan to permit its removal may be required. The quality of emulsion applied can be controlled by an adjustable scraper blade.

A self-cleaning device is often useful to keep the applicator in a satisfactory condition.

Pickoff devices may have to be provided behind applicators to prevent the base material from adhering to them.

Shaping Tools

Smoothing or glazing of sheets is effected by cold or hot calender rolls. To obtain a specific structure, such as leather grain, embossing rolls are employed, the paper passing between these rolls under adequate pressure provided by weights or springs.

Of such a pair of rolls, one carries the engraved design, while the other is covered with some sufficiently resilient material.

Longitudinal cutting is effected by drum knives, or by a blade knife set to revolve at suitable intervals, or by shears. Proper guiding is desirable for satisfactory life of the cutting tools. Clean edges require setting of shears to close limits. The shear angle depends to some extent on the thickness, humidity and other properties of the stock.

Lateral cutting is usually done by trimming rolls.

Patterns other than rectangular are provided by die presses. In the setting of dies, it should be noted that for complete severance of the material, the die need penetrate into the stock to a certain percentage of its thickness only, usually between 30 and 70 per cent of the total depth, depending upon the structure of the material.

Punching, doming, flaring and similar shaping operations take place in punch presses unless shaping rollers can handle the job. Stiffness of press frames is particularly important. In punching, the hardness of the stock affects the tool clearance; the harder the material the closer the clearance. Energy requirements are a function of the shearing strength of the stock, its thickness and flow characteristics. Where cutting takes place, the length of the cut is of influence; in drawing,

(*) This is Part II and concludes the article. Part I appeared in the January (1945) issue of this magazine.

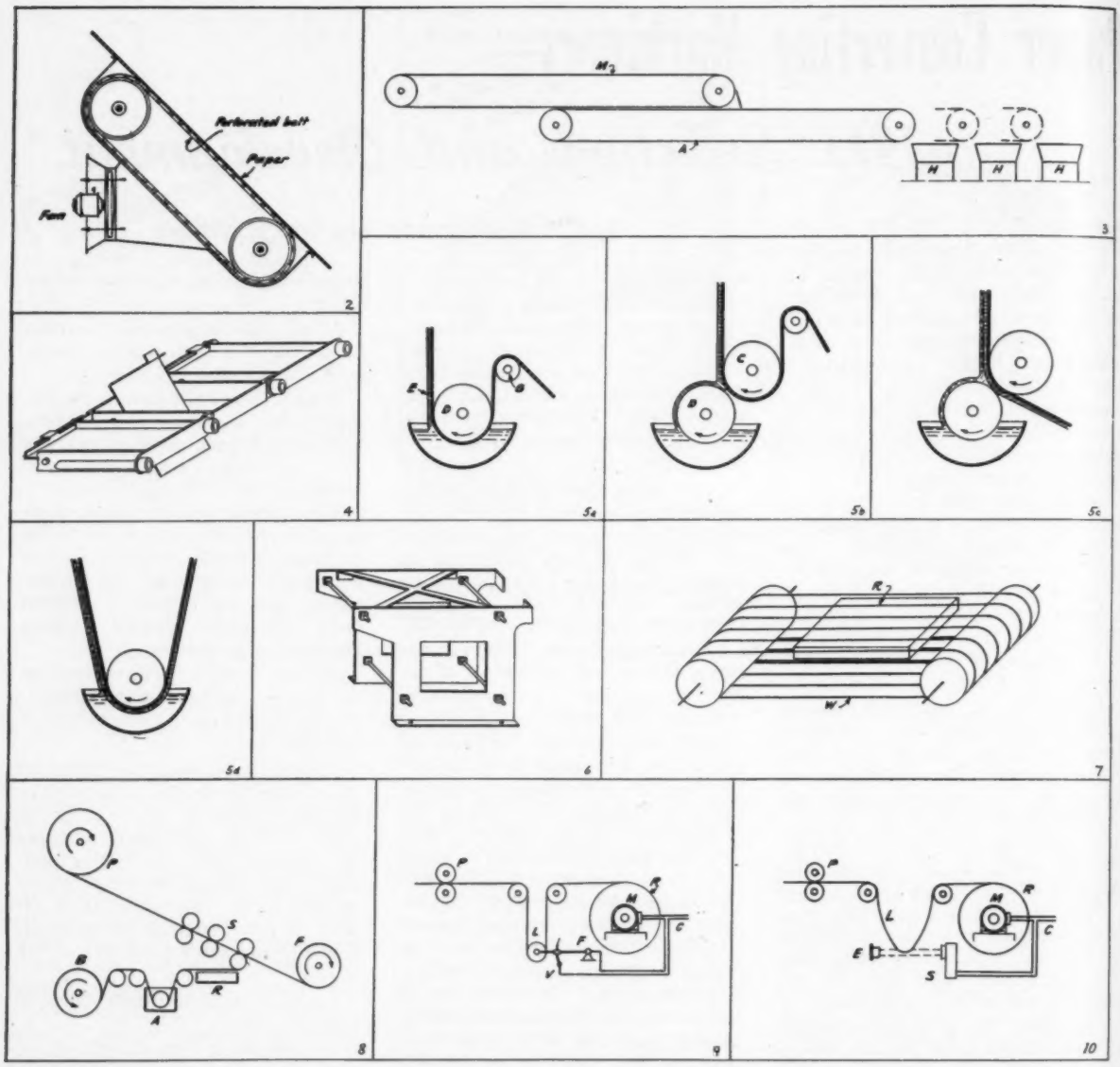


Fig. 2—Vacuum type draw belt for paper and similar endless sheet materials. . . . Fig. 3—Arrangement of conveyors for feeding several points. (M) main conveyor; (A) auxiliary conveyor; (H) hoppers. . . . Fig. 4—Chain distributor for prefabricated pieces showing tilted flap. (Courtesy Central States Copper Co., Inc.) . . . Fig. 5—Four different arrangements of coating rolls. . . . Fig. 6—Typical frame assembly (diagrammatic). Side plates held together by anchor bolts, and stiffened by cross braces. . . . Fig. 7—Radiant dryer setup. (R) radiant heaters; (W) wires. . . . Fig. 8—Arrangement of combining machine for box paper manufacture. (B) base material; (A) adhesive applicator; (R) radiant heater; (F) covering material; (S) squeezer rolls; (P) product. . . . Fig. 9—Mechanical speed control. (P) product draw rolls; (L) loop; (V) variable resistance (rheostat); (F) fulcrum; (M) motor; (C) power connections; (R) roll for finished product. . . . Fig. 10—Optical speed control; (P) product draw rolls; (L) loop; (E) emitter—light source; (S) sensitive element (photoelectric cell); (M) motor; (C) power connections; (R) roll for finished product.

the circumference of the most extended portion of the piece deformed is the chief factor. Sharp draws are likely to prove troublesome.

Sewing is an operation customary in the production of paper bags, window shades and similar goods. Modern sewing heads have speeds up to 4,000 rpm; stitch widths are of the order of 4-10 per inch. Resulting production rates therefore range between 1,000-400 in./min.

A disadvantage of sewing as a joining method is the weakening of the strength of the sewed material due to the punctures of the needle.

This disadvantage can be overcome by dipping of the seam in a rubber solution or in some other strengthening compound.

Machine Frames and Bearings

Machine frames (Figure 6) have to fill several requirements. Among these requirements are:

1) Take up forces (adequate strength)

2) Absorb vibrations (sufficient mass and resilience)

3) Dimensional stability (adequate stiffness)

4) Accurate support and alignment of parts (precise machining to suitable tolerances).

Cast iron frames with machined surfaces are commonly used. Yet welded structures may yield savings in both weight (possibly 1/3 over that of cast iron) and first cost. In the case of a single unit or of the first few units of a series, the actual cost of welded

fabrication is dependent on a good fit up and for that reason is difficult to estimate in advance. Designs which are excellent from the functional angle may be problematical from the welding angle. In fact, a welded frame may cost much more than estimated because of misfits. (The estimate may be gratis.)

Heaters and Coolers

Material in a continuous sheet may be heated by steam-heated cylinders, open flames, or infra-red units. Radiating heat may be supplied by gas radiators, electric hot-wire resistors, strip resistors, or lamps with low temperature filaments (carbon or tungsten) in gas-filled bulbs with unit output up to 1,000 watts. Coatings and finishes can be dried conveniently in this manner.

Radiant heat (Figures 7 and 8) is supplied in enclosures through which the treated paper is moved at a suitable speed by means of a conveyor. The reflector lamps or other heaters are mounted to permit adjustment and through so doing, to eliminate cold spots and obtain best possible uniformity in heating.

In the case of commercial reflectors, available in diameters of from 7 to 12 inches, the radiation usually is directed angularly to the deflector axis. The spreadings are made to overlap. In this way, the average radiant intensity, normal to the bank, is essentially constant, regardless of the distance from the lamps.

In drying, heating and cooling, the effect obtained depends upon time, intensity of heat transmission, and physical characteristics of the stock. Thickness and density, for example, control the role which diffusion plays in the drying operation. In drying, the moisture in the exposed outer surfaces evaporates first. Further moisture is supplied the outer surfaces by diffusion and/or capillarity. Too large differences in moisture concentrations set up unequal drying stresses, thus causing defects in the stock. If evaporation at the surfaces exceeds the rate of supply of moisture from within, the surface shrink and set up stresses within the sheet.

Certain coatings and finishes are not well suited to radiant drying. For economical radiant drying, the overall absorptivity of the treated material must be adequate. This factor is controlled by the properties of both the coating and the base material.

Combinations of transparent coatings and highly reflective materials have low overall absorptivity. Successful radiant drying requires coatings of high absorptivity and high linear absorption coefficients. Many coatings and finishes do not respond to these requirements. In such cases, contact drying or convection drying would prove preferable to radiant drying.

The wind tunnel dryer probably is the most suitable equipment for application where convection drying is preferred. It offers adequate flexibility of such operating variables as temperature, moisture concentration, dryer atmosphere, and the velocity of the carrier gas.

The drying temperature is limited at times by the thermal sensitivity of the product. Too high a drying temperature may cause chemical degradation of certain types of fibers.

Some materials require stage drying. In other words, drying takes place in drying chambers which have several zones in which the movement of air is regulated or the quantity of radiant heat is arranged progressively or in increasing quantity from zone to zone. This method of drying effectively drives off thinners and avoids pinholing and other defects.

Radiant heat may be combined with auxiliary contact or convection heaters of various types.

If atmospheric conditions within a dryer are not regulated properly, oxidation may cause the product being dryed to yellow. Automatically controlled air conditioners can be developed to eliminate dust and other objectionable matter where sensitive coating might be affected by them.

Good thermal insulation of drying and cooling chambers improves operating economy. Radiant heat units permit a high rate of heat transfer under favorable conditions, up to $10 W/in^2$ can be transmitted by radiating both sides of a sheet at the same time.

Housings and Casings

There is a certain trend towards encasing machinery units with sheet metal covers or housings. These covers enclose all structural and mechanical items except operating levers, handwheels and instrument dials. Sometimes, the corners of such housings are rounded, and the equipment subsequently described as streamlined.

While the enclosing of machinery and the breaking of sharp corners may be desirable, the extent to which this "streamlining" has gone, at least in certain instances, represents a fad with no inherent justification. Process machinery, as a rule, is stationary. In a well-designed machine unit, accessibility and visibility of elements are essential requirements. Accident prevention can be achieved by hung-on frames with wire netting as efficiently as with fanciful and purposeless metal casings.

Power Supply and Speed Control

When equipment is to be driven by electrical energy, the use of an individual motor for each operation, or at least for every individual process unit is preferable to group driving. The use of the individual motor drive reduces energy losses, simplifies the mechanism and speeds up operation. Since electric motors, particularly the smaller sizes, are not excessive in cost, such a method of driving also may prove to be the least investment.

There also are electric motors to meet a large variation in operating conditions and for constant as well as for variable speed service. Rotor speed can be reduced to constant ratio by means of either planetary gear or worm gear drives. The power output shaft can be concentric with the driver shaft or at a right angle to it.

Stepless control can be achieved by mechanical means or electrically by brush shifting on an armature and auxiliary rotor winding. Also, the torque may be made constant or variable to suit the specific application.

Synchronization of movements does not cause appreciable difficulties in most processing machinery. However, a long sheet of paper passing over a large number of rolls may exhibit variations in length due to change in moisture content. To maintain proper tension in such a case would require a synchronization of drives. Such synchronization can be achieved by mechanical (Figure 9) or electrical feedback devices.

A loop of sheet material can operate an electrical controller which regulates motor speed in proportion to the rise and fall of the loop. Likewise, in another arrangement (Figure 10), a light beam may be directed on the loop of the web. In this case, as the loop rises and falls, it varies the amount of light which reaches a phototube. In special cases, amplidyne generators (electro-mechanical amplifiers with a high speed of response) are used to correct stretching and slippage in draw rolls.

In machines for bagmaking and similar operations, the printed sheet is unreeled and a photoelectric register controls holds the printed matter in proper relation with the processing in spite of paper shrinking and stretching, and slippage in the draw rolls. After the photoelectric tube of the control has detected the position of the printing and the photoelectric current has been amplified sufficiently to operate a magnetic device, either mechanical or electronic means may be

employed to carry out the subsequent operations.

Continuous speed control of large power consuming units can be obtained by electrical means. Where power requirements are small, mechanical friction drives avoid electrical complications. In instances where extremely accurate control is desired, an electronic control or a combined arrangement may be used.

It is claimed that rotating control aggregates (motor-generator) can be arranged within the same space as required by electronic setups. Likewise, the use of electronic devices increases first cost appreciably. Insensitivity to dust is the chief advantage of an electronic control.

Overload protection of electric motors is provided by thermal relays. Emergency stops of electrical drives is achieved by dynamic brakes. Pressing a stop button disconnects the power, and a resistor is connected across the armature. Mechanical band brakes, applied to reel shafts, are used to maintain sheet tension in paper rolls that are being unwound.

Several factors should be considered in arranging electrical equipment. Among these factors are:

1) Safety of operation. No protruding parts. No exposed parts carrying electric current.

2) Structural safety. Protection of electrical equipment against mechanical damage, humidity, cuttings or chips, chemicals and dirt.

3) Economy of space. Conduits and wiring inside of bases, frames, housings.

4) Convenience. Arrangement of switches and other control elements, fuses and instruments on a central control panel.

In certain cases, it is advantageous to separate electric controls from the processing equipment. These cases would include applications in connection with large units involving bulky control equipment, installations of rheostats which dissipate much heat and which might affect the performance of processing machines, and installations of electronic or other sensitive equipment which must not be exposed to vibration or shocks from mechanisms in movement.

Small machines usually have their control equipment attached directly to them. With medium sized machines, it often is possible to fit the electrical equipment in frame bases or inside of doors. Control panels may be built into recesses of machine frames, or protected by wall-mounted enclosures.

For limit switches, sufficient space must be reserved in proper locations when machine frames are designed. Control buttons require so little space that they can be placed wherever convenient. Push buttons may be of either the momentary contact or of the maintaining contact type. Also, selector switches and indicating lights are available in very compact designs.

Use of Supersonics

In modern European practice, ultrasonic waves, which impart extremely rapid motion to solids, are used to provide a more intimate contact between the surface of a base material and a coating. Incidentally, ultrasonic waves also disperse solids in a liquid with a thoroughness not achievable otherwise.

Supersonic vibration is produced by an ultrasound generator using magnetostriction with frequencies exceeding 12,000 cycles per second, and causing accelerations 1,000 to 10,000 times that of gravity. This vibration, when transmitted to the sheet and coating, effectively improves the quality of the bond.

Process Control

Both manual control and visual inspection of the finished product are being replaced by automatic control. Satisfactory automatic control systems can duplicate very satisfactorily the combination of operating sequences and other production variables. In so doing, a product of uniform quality is manufactured at the lowest possible cost. The rate of production is high; the waste is minimized.

Automatic equipment must be designed to meet variations in production. Production can be co-ordinated through a master control system. Machine operation thus becomes largely a supervisory job.

Examples of individual controls are: thermostats in dryer cylinders and glue reservoirs, automatic web guides in machines working rolls of paper, quantity selectors in piecework units, etc. In paper coating work, the principal process variables to be controlled are time, temperature, roller speeds, and humidity conditions.

Inspection of fast-moving objects by means of thermo-ionic or electronic devices eliminates fatigue. Electronic devices also indicate paper breaks in printing presses, etc.

Photoelectric devices generally comprise a scanning head (containing a light source and lens system), a pick-up system, and an amplifier.

Adjusting, operating, and indicating instruments should be centralized within convenient reach and sight.

Electrical Charges in Paper

When paper is subjected to cutting, winding, calendering, or similar operations, static electricity is generated in the paper. However, appreciable charges only are encountered under conditions of sufficient dryness.

The tendency of paper to generate static electricity is affected by its fiber furnish, fillers, sizing, thickness, density, and smoothness. For a given humidity, all other factors being equal, papers carrying a high percentage of groundwood or mechanical pulp exhibit higher charges than chemical pulp papers. The charges are smallest in papers of high rag content.

The most important factor involving static electricity in paper seems to be the humidity of the air surrounding the paper during the building up of the charge. In rolled and stacked paper, where external air has no access to the surfaces involved, the moisture in the paper itself determines the retention time of the charge. The higher the initial charge in the paper, the drier the paper, the closer its winding or packing, and the drier the ambient air, the longer the retention time.

Since such static accumulations are fire and explosion hazards, devices should be provided to neutralize them. Simple grounding by means of a string of tinsel hung across the width of the web often is sufficient. Sometimes the purpose is achieved by a steam spray.

Cost Computations

As a rule, machinery is purchased for one or several of the following reasons:

1) To reduce manufacturing costs
2) To increase production rate
3) To replace worn out equipment
4) To improve quality of product
5) To improve working conditions
6) To extend production program.

Acquisition of standard machinery simplifies pre-purchase cost figuring. Virtually all cost factors in cases of this kind can be ascertained beforehand. Specialized machinery, however, requires more extensive estimating and sometimes much guessing. Practicable operating speeds, extent of installation and maintenance expenses, direct labor needed for operation, experimental running-in time, and additional equipment involved are items which must be considered.

Cost Factors in Fabrication

The final cost of any item of production machinery depends upon the number of units to be provided; amount of development work involved; fabricating, machining and assembling procedure; permissible tol-

erances; and the extent to which standard parts can be incorporated. The selection of materials has a lesser influence.

For bases, beds and frames, welding is often selected for appearance and strength, with box sections and parts made of rolled plate bent on a brake. Since in welding jobs the production cost depends mainly on the amount of welding metal deposited, intermittent welds seem preferable where stresses are low. Actually, continuous welding is often applied for appearance. Furthermore, a certain amount of experimentation is almost always necessary in the case of more complicated parts, so that most of the expense for a first unit turns out to be due to the correction of misfits or warping, and sometimes to the making, remodeling changes in the first design.

A weight reduction of machinery parts decreases shipping cost, facilitates handling, and permits of less expensive foundations. In the production of cams, the cost depends upon available facilities for reproducing the theoretically correct outline of contour with the smallest possible error.

Life of Machines

The depreciation period of special machines in most cases is shorter than for standard machines. Likewise, the amortization time should be less for special than standard machines. Since the duties and properties of so many converted paper items are more or less specialized in character, the life of the equipment producing them is more than likely to be comparatively short.

Salvage and Resale Value

The specialized character of such equipment also gives it a considerably low resale or salvage value. The market for such machinery at best is very limited.

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Returning Service Men . . . . . How to Help Them Get a New Start

▶▶▶ WITHOUT a doubt, the biggest job that industry will have in the next two or three years is to provide jobs for all, and the returning service men are to have preference in this respect.

More than a thousand men per week are now returning with honorable discharges from the armed services. This rate of return will undoubtedly increase rapidly when the war with Germany is over.

Now is a good time for every supervisor to gain experience in the proper handling of returning service men while the rate of their return is low.

Friend and Counselor

Once a service man is back on the job, the supervisor should become his best friend and counselor. No one will have more to do with helping service men get a new start than supervisors.

More and more the men who return will be men who have been through a great many harrowing experiences. They will need to "get in step" once more with civilian life —with life on the job. Some of these adjustments may be difficult. The constant friendly advice and guidance of a supervisor will make all the difference in the world.

Getting the Veterans Started

It is good to have the returning veteran feel that he is getting fair consideration. He should be treated with courtesy, and appreciation. Your first interview with him should be thorough and sympathetic, but be sure not to overdo the sympathy. The veteran does not want to be "babied." He does want a good square deal.

If a veteran is physically handicapped, assign him to a job that does not call for physical capacities he no longer possesses. If you place him on the right job, he need not be regarded as handicapped. The worst thing to do is to put a handicapped veteran on a job which he cannot do efficiently and then tell him, "I know you can't do a full day's work on this job, but we will be glad to overlook that and won't expect full results from you."

Placed on the right job, the disabled veteran can earn his full pay and maintain his self-respect.

First Weeks Most Important

The very first few weeks are the most critical period for the veteran in making his adjustment to a job. The supervisor can play a most important part in aiding him in this adjustment. The veteran's job is the most important factor in his readjustment to normal life.

Every supervisor should thoroughly understand his company policy regarding the hiring of veterans and dealing with them after they have been placed on the payroll. The supervisor's first duty is to make the veteran feel at ease. Find out the kind of an assignment the veteran had in his military service. These facts will be of great value in placing him on the proper job and in getting him adapted to it quickly and easily.

Inform the returned veteran of any changes in policies or practices which have occurred since he left. Instruct him on any new methods which have been adopted. Consult with him frequently and follow him closely so that you know he is getting off to a good start.

Encourage him to ask questions and to seek help from you. Be sure that he has every possible advantage of correct information and proper training. Keep such close daily contact with the veteran that he will feel that he can bring his personal problems to you. Watch him very closely for any feeling of dissatisfaction or inadequacy.

Remember, these are the boys who have helped to maintain our freedom. Our greatest service to them is to give them an opportunity to make good on a good job.

(*) From *Management Service*, published by the Elliott Service Company, New York City.

Paper SKETCHES . . . . . .

WHEN THE SPANIARDS CONQUERED MEXICO IN THE EARLY 1500'S THEY FOUND THE AZTECS USING A PAPER-LIKE MATERIAL LAVISHLY IN RELIGIOUS CEREMONIES. THEY USED IT TO ADORN TEMPLE IDOLS, PRIESTS AND PERFORMERS, AND CARRIED IT, ATTACHED TO RODS AND STICKS, IN THEIR PROCESSIONS.

IN 1705, WILLIAM RITTENHOUSE OF GERMANTOWN, PA., TOOK A 975 YEAR LEASE ON THE LAND ON WHICH HIS MILL WAS LOCATED.

SO POPULAR WAS "FLOCK" WALLPAPER EARLY IN THE 1700'S, THAT MADAME DE POMPADOUR, FAVORITE OF LOUIS XV, USED IT TO PAPER ONE OF THE WALLS OF THE PALACE AT VERSAILLES.

ON AUGUST 3, 1944 AN EDITION OF THE LONDON TIMES WAS PRINTED ON INDIA PAPER. COPIES OF THIS EDITION WITHIN 24 HOURS AFTER PRINTING WERE ON SALE IN THE UNITED STATES AND CANADA.

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Steel is vital to our economy in a way no other material can parallel. And in no other field is the service of valves by the thousands more important to steadily-maintained high levels of essential production.

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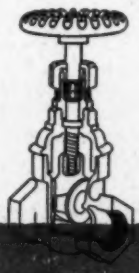

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ASSOCIATIONS

Canadian Papermakers Meet in Annual Convention

▶▶▶ THE MOUNT ROYAL HOTEL, Montreal, Quebec, was a papermakers' rendezvous on January 24, 25 and 26, 1945. On those days, the Canadian Pulp and Paper Association, as well as The Technical Section and the Woodlands Section of the Association met there in annual convention.

It was the thirty-second annual convention of the Canadian Pulp and Paper Association; the thirty-first annual meeting of the Technical Section and the twenty-seventh annual meeting of the Woodlands Section.

Attendance at these meetings was splendid. Delegates and guests well represented the Canadian pulp and paper manufacturers and allied groups. There also were guests from the United States.

Possibly, without question, the outstanding event of the Canadian Pulp and Paper Association meeting was the presentation of a check for $175,000 to the Deputy Administrator of Munitions and Supplies, G. K. Shiels, on behalf of the Wartime Machine Shop Board. The presentation was made at the annual luncheon on January 26 by Fred L. Allen, manager Newsprint Division, Canadian International Paper Company, who had organized the Wartime Machine Shop Board and acted as its managing director for the past three years.

The check represented the surplus over cost of the work done in eighty-three paper mill machine shops—the profit on over $10,000,000.00 worth of work.

The speech of acceptance by Mr. Shiels was a very eloquent one and was excellently received. Mr. Shiels related that the check represented more than the successful and generous efforts of the Wartime Machine Shop Board—it indicated the spirit actuating the entire pulp and paper industry in wartime, and its success in harnessing its facilities to meet war needs.

Mr. Shiels also called attention to the importance of the Canadian newsprint industry. Forty countries throughout the world, he said, now depend chiefly upon Canadian newsprint for their supplies.

In concluding his remarks, Mr. Shiels related, "Leadership carries its responsibilities. The privilege of being our greatest industry and our largest exporter carries correspondingly great duties. But this is not the time to dwell on the future. It will be conditioned by a host of circumstances and problems of which we are now not even aware. We shall see them only when the curtain rises on victory and on the postwar world."

E. Howard Smith, vice president of Howard Smith Paper Mills, Ltd., as chairman of the Executive Board of the Canadian Pulp and Paper Association, presented the annual report of the association, — the Thirty-second Annual Report. (*This report is published in full elsewhere in this issue.*)

Many splendid papers were presented before the several meetings of the Technical Section program. There also were the reports of Douglas Jones, secretary-engineer of the Technical Section, and of George E. Shipman, groundwood superintendent, Donnacona Paper Co., Ltd., as chairman to the Technical Section for 1944. Both of these reports were presented at the Annual Section Luncheon on January 25.

In presenting his report, Mr. Jones mentioned that ninety-seven new members were admitted to membership during 1944; that three members passed on during the year: namely, I. H. Copeland, S. J. Fisher, and Henry Grinstad; that the active membership as of December 31, 1944, total 566; and that during the year six supplier companies were admitted to affiliated membership and two others have been approved for 1945.

Mr. Jones also recorded the honors bestowed on members of the Section for service in the Armed Forces and on the home front.

K. S. Maclachlan with the Navy, H. B. McAdam with the Army, C. Minard with the Air Force, and A. G. Pounsford for his service in various civilian activities and Victory Loan Drives were each granted the Order of the British Empire.

Harold Crabtree, one of the honorary life members of the Section, was granted a C.B.E. for the outstanding job he has done as president of Allied Supplies Corporation.

Donald D. Carr-Harris, with the Air Force, continued Mr. Jones, was recently mentioned in despatches as have been many others.

Mr. Jones welcomed home several members who have served for some years with the forces and have now returned to civilian life. Included in these names were the following: K. S. Maclachlan, C. B. Davies and W. R. M. Rutherford and Dr. H. W. Johnston.

Attention was called to the Technical Section Summer meeting which was held at Niagara Falls, Ontario. Mr. Jones said that the attendance at this meeting broke all records for summer meetings for the fourth successive year.

Much of Mr. Jones' report was given over to highlighting the efforts of the 1944 committees of the Section.

In so doing, due mention was made to the work of the following groups: Alkaline Pulping, Board, Engineering, Engineering Data Sheet, Fine Papers, Groundwood, Heat and Power, Newsprint, Physical and Chemical Standards, Printability, Sulphite, Waste and Wood Chemistry.

Mr. Shipman, in reporting as chairman to the Technical Section, said, in part, that during the year the various working committees have held over 100 meetings, exclusive of the summer and winter meetings; that the numerical strength of the Section has grown in the past year from 483 to 566; that membership in the section is made up of operators, superintendents, engineers, chemists, research workers, managers, and presidents; that Douglas Jones was appointed in 1941 as Secretary-Engineer; and that the Canadian Pulp and Paper Association has increased the budget of the Section and has approved the principle of appointing an assistant to Mr. Jones for 1945.

Mr. Shipman also related that the Canadian pulp and paper industry has passed through two distinct periods—a building boom from about 1913 to 1929, and an over-production period from 1929 to 1939, when cost reductions became very important, due to keen competition. He added, "I believe we will soon be enterin ga third period, caused by the war, which has shown the new uses to which wood can and will be put."

For this third period, in the opin-

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The "American Standard" elbow has a center-to-end dimension equal to one and one-half times the nominal pipe size. The Midwest "Long Tangent" elbow has a center-to-end dimension of one and three-quarters times the nominal pipe size; it has tangents (straight ends) equal to one-fourth of the nominal pipe size.

These long tangents make it possible for pipe and fitting to be lined up more quickly and accurately. Less pipe is required, a short nipple and an extra circumferential weld are frequently eliminated, and slip-on welding flanges are more easily used.

Both elbows have all advantages of the unique Midwest manufacturing process: final working of the metal in compression (which means exceptional dimensional accuracy and uniformity), stress relieving, exact included angle, true circular section and uniform wall thickness.

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ion of Mr. Shipman, the pulp and paper industry of Canada should have three very definite objectives: (a) preservation and perpetuation of our forest resources; (b) conversion of Canadian wood resources into finished products in Canada; and (c) development of hew products, and improvement of present products, so that quality and costs will be second to none.

Another interesting feature of the luncheon program was the presentation of several awards.

Dr. D. A. Sankey, Ontario Paper Co., Ltd., was presented with a medal for his contribution on waste wood recovery. The presentation was made by A. L. Dawe, Consolidated Paper Corp., Ltd.

William de Montmorency, Gair Company of Canada, Ltd., received the Technical Section Service Award. This presentation was made by F. G. Robinson, of the Canadian International Paper Company. The award was made to Mr. Montmorency because of the work which he did in promoting the affairs of both the Technical Section and those of the Canadian paper industry.

A safety award in the form of a shield was presented by J. H. Stephenson, of the *Pulp and Paper Magazine of Canada* to Price Bros. in recognition of a splendid record in accident prevention.

New officers were elected by each of the three groups that met simultaneously for this outstanding wartime meeting of the Canadian paper industry.

The elections of the Canadian Pulp and Paper Association follow:

Chairman of the Executive Board—R. L. Weldon, president, Bathurst Power & Paper Co., Ltd.

Senior Vice President — C. R. Whitehead, vice president of Consolidated Paper Corp., Ltd.

Executive Board — George Barber, Spruce Falls Power and Paper Co.; G. L. Carruthers, Interlake Tissue Mills, Ltd.; W. S. Kidd, E. B. Eddy Co.; E. M. Little, Anglo-Canadian Pulp and Paper Mills, Ltd.; F. G. Robinson, Canadian International Paper Co.; J. A. Young, Pacific Mills, Ltd.

The following elections were made by the Technical Section:

Chairman—Dr. A. C. Hill, Director of Research, Anglo-Canadian Pulp and Paper Mills, Ltd.

Technical Council (three years)—R. J. Askin, Manager of Mills, Abitibi Power and Paper Co., Ltd.; Carl D. Jentz, Sulphite Superintnedent, St. Lawrence Paper Mills Co., Ltd.; A. J. Philip, Resident Manager, Canada Paper Co. (Windsor Mills, Quebec).

At the Woodlands Section meeting, the following officers were elected as new appointees:

Chairman — B. F. Avery, Great Lakes Paper Co., Ltd.

Vice President — Major General Howard Kennedy, Quebec North Shore Paper Co.

Councillors — V. F. Johnson, Canadian International Paper Co.; M. R. Kane, Price Bros. & Co., Ltd.

Officers re-elected included the following: A. W. DeLand, Powell River Co., Ltd.; F. Faure, Consolidated Paper Corp., Ltd.; Gordon Godwin, Quebec North Shore Paper Co., Ltd.; J. B. Matthews, Provincial Paper, Ltd.; R. G. MacFarlane, Fraser Companies, Ltd.; C. B. Davis, Abitibi Power & Paper Co., Ltd.

Most of the papers given at the different meetings of the Technical Section were preprinted. The titles and authors of all such papers follow:

"The Roberts Grinder, Its Make-up and Its Use at the Thorold Division, Ontario Paper Company," J. B. Jones, and J. M. Cairnie, Assistant Mill Manager and Groundwood Engineer, Ontario Paper Co., Ltd., respectively.

"Pretreatment of Wood Before Grinding," E. H. Lougheed, Abitibi Power and Paper Company, Limited, Sault Ste. Marie Division.

"Groundwood from Spruce and Balsam Tree Tops," D. H. Kincaid, Donnacona Paper Company, Limited.

"Pressing and Press Roll Crowns," F. A. Garrett, Canadian International Paper Company.

"Stock Metering and Proportioning," F. C. Brown, Manager, Thunder Bay Paper Company, Limited.

"Wood Properties in Relation to Sulphite Pulping," T. R. Moore and

SCREEN PROBLEMS MAIN TOPIC DISCUSSED BY THE NW DIV. SUPERINTENDENTS

The Northwestern Division of the American Pulp and Paper Mill Superintendents Association and its industrial affiliates held a dinner meeting at Hotel Wausau, Wausau, Wisconsin, on January 15, with an attendance of 62 members. R. I. Nilsen (Cloquet, Minn.), division chairman, presided.

The main speaker at the meeting was Norman O. Weil, chairman of the industrial affiliates division, who spoke on papermaking wire problems. He spoke on the recent development of a patch welder that has captured the attention of paper mill superintendents. Mr. Weil, who is a salesman in the New York territory for W. S. Tyler Company, led the discussion on various methods tried by the mills in making the punctured wire as good as new with the new invention. He gave various suggestions as to how various mills had adapted means of improving its use.

Attending the meeting were a number of national and division officers.

Taking part in the meeting of the Northwestern Division of the Superintendents Association, held in Wausau, Wis., were (L. to R.): Seated—L. J. Smith, Combined Locks, first vice chairman of the Division; Norman O. Weil, New York City, chairman of the Industrial Affiliates and main speaker, and R. I. Nilsen, Cloquet, Minn., division chairman. Standing—R. A. Nugent, Nekoosa-Edwards Paper Co., second vice chairman of the division, and Harold A. Skinner, sulphite superintendent of the Marathon Corporation, who was in charge of local arrangements for the meeting.

A DREAM
COMES TRUE
Development engineers had long dreamed of a continuous process for vulcanizing rubber belting, but the problem was a stupendous one.
BWH engineers found the answer by perfecting a new and original rotary type of press which makes the vulcanization continuous and automatic instead of spasmodic and arbitrary. The Rotocure Process replaces variation with uniformity.
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F. H. Yorston, Members of the Sulphite Committee., Technical Section, C.P.P.A., 1944.

"Unformity in Sulphite Pulping," J. Foster, Sulphite Superintendent, Anglo - Newfoundland Development Company, Ltd.

"The Waterous Friction Log Barker," Alex. Murray, General Superintendent, Price Brothers & Company, Limited, Rimowski, P. Q.

"Stock Preparation Equipment," C. H. Vickery, E. D. Jones & Sons Company.

"Wartime Developments and Postwar Plans of the Swedish Pulp and Paper Industry," Edwin C. Jahn, Professor of Forest Chemistry, The New York State College of Forestry.

"Mechanical Superintendent Looks at Newsprint," "Newsprint Machine Speeds Increased from 1,000 to 1,500 fpm at Baie Comeau," and "Manufacture of Precipitated Calcium Carbonate and Its Use as a Newsprint Filler" were the subjects of three other papers. The first of the three papers was by J. P. Grant, *Philadelphia Bulletin;* the second by W. R. Keating, paper mill control engineer, Quebec North Shore Paper Company; the third, H. R. Davidson, paper mill engineer, Ontario Paper Company.

◆

JOINT MEETING HELD IN KALAMAZOO BY TAPPI AND SUPERINTENDENTS ASS'N

The annual joint meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association and the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry was attended by 324 members and friends on the evening of January 11 at the Park-American Hotel, Kalamazoo.

Maxwell D. Bardeen, president of the Lee Paper Company, Vicksburg, Michigan, was toastmaster of the evening. E. B. Taylor (Stein, Hall Manufacturing Company), chairman of the Kalamazoo Valley Section of TAPPI, and Joseph L. Waber (Rex Paper Company), chairman of the Michigan Division of the Superintendents Association, acted as co-chairmen of the evening.

The chief speaker of the evening was E. W. Tinker, executive secretary of the American Paper and Pulp Association, New York City. (*Mr. Tinker's address is published, complete, in this issue.*)

Introduced to the meeting was Norman O. Weil, chairman of the industrial affiliates division of the Superintendents Association. Mr. Weil is an official of the W. S. Tyler Company, Cleveland. Mr. Weil told of a chemical handbook of 125 pages now being prepared by his committee that lists and describes the use and source, and the dangers of, more than 600 chemicals used in the industry, which book will be ready this summer.

L. W. Sutherland (Chairman of the board of Sutherland Paper Company), Mayor of Kalamazoo, greeted the out-of-town visitors. Association officials present included: Ray L. Barton (Plainwell, Mich.), national president of the Superintendents Association. D. K. Brown, president of the American Paper and Pulp Association, was unable to be present, but greetings from him were read by Toastmaster Bardeen.

◆

ORGANIZE NEW SECTION OF CANADIAN SOC. FOREST ENGRS.

It was announced on January 27 that a Province of Quebec Section of the Canadian Society of Forest Engineers has been organized with F. T. Jenkins, of Montreal, as chairman. Heretofore, Quebec was the only province in the Dominion not represented by a section of the nation-wide Canadian Society of Forest Engineers.

At a meeting held as a preliminary to the pulp and paper convention which took place in Montreal on January 24, 25 and 26, plans for membership, future activities, and for the drawing up of a constitution were discussed by a previously elected council. Following the council meeting, an open general business meeting was held at which further plans were laid and a number of standing committees named to operate throughout 1945.

Membership in the newly organized Quebec section, which has the support of the Quebec Provincial Forest Service, will be composed of private consulting engineers, engineers in industry and in the Provincial Government Forest Service, as well as any engineers resident in Quebec who are connected with the Dominion Government Forest Service.

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COMING EVENTS

March 1—First national Products of Tomorrow Exposition, Coliseum, Chicago.

STATED MEETINGS

Technical Associations of the Pulp and Paper Industry

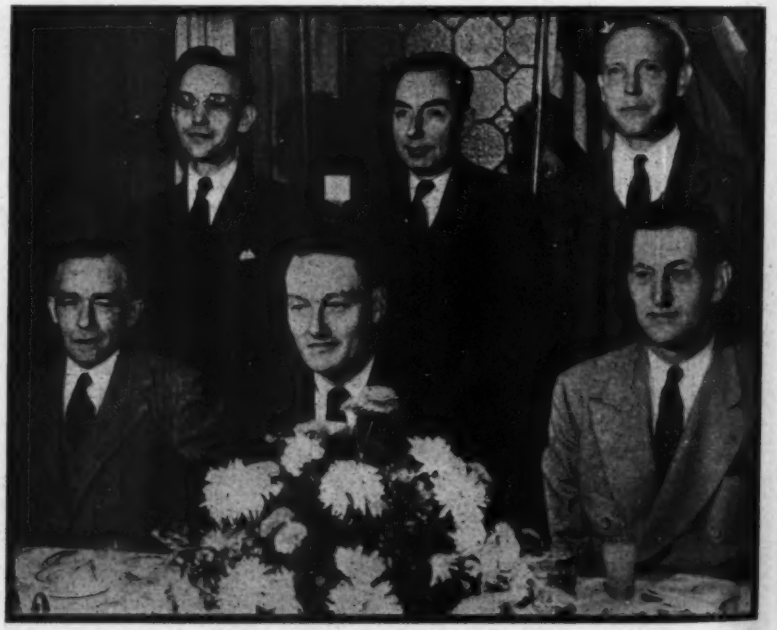
Delaware Valley Section—First Friday of each month at the Engineers' Club, Philadelphia, Pa.

Kalamazoo Valley Section—First Thursday of each month, including June, at 6:30 P. M. at the Columbia Hotel, Kalamazoo, Mich.

Lake States Section—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Chicago Professional Paper Group

Third Monday of each month at Chicago Bar Association, Chicago.



At the annual joint meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association and the Kalamazoo Valley Section of TAPPI these well-known association men were seen at the speakers' table: (L. to R) Seated—E. W. Tinker, executive secretary of the American Paper and Pulp Association, and speaker of the evening; Maxwell D. Bardeen, toastmaster; and Norman O. Weil, chairman of the Industrial Affiliates. Standing—Joseph L. Weber, chairman of the Michigan Division of the Superintendents Association; Ray L. Barton, national president of the Superintendents Association, and E. B. Taylor, chairman of the Kalamazoo Valley Section of TAPPI.

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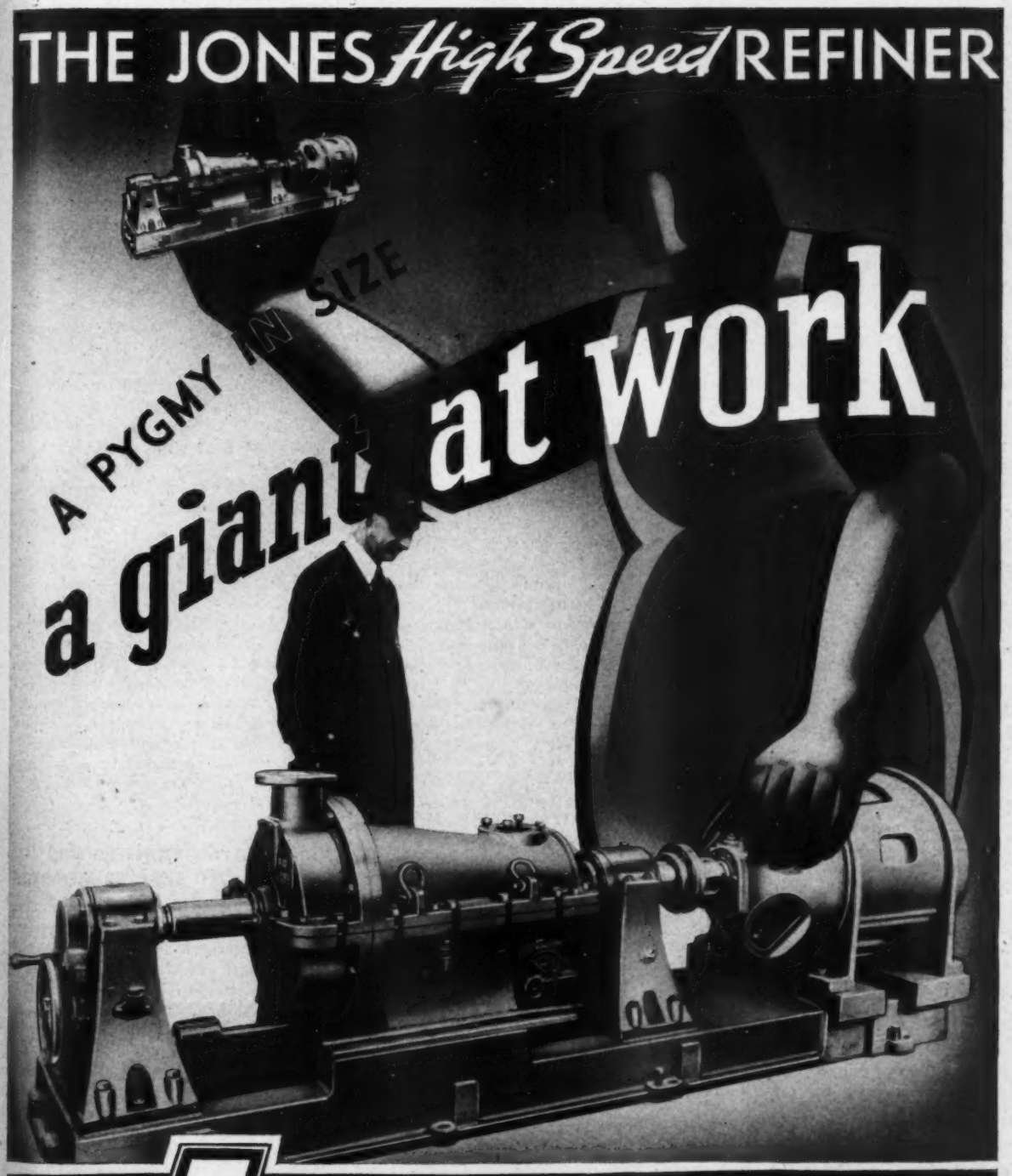

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ALLIED

J. O. ROSS CORP. HAS EQUIPPED LABORATORY FOR COMMERCIAL TESTS

A bird's-eye view of the enlarged and improved testing laboratory of the J. O. Ross Engineering Corporation, has been deftly portrayed in a very comprehensive brochure entitled "The Ross Laboratory—Where Research Today Produces Results for Tomorrow." The laboratory is located at New Brunswick, New Jersey. It is equipped to permit commercial tests to reproduce actual field conditions. The company states that while it is not the object of this lab. to engage or assist in purely development work, it can prove of value to industrial concerns seeking to determine the most efficient methods for processing, and that the facilities of the laboratory are available to such concerns.

The brochure is available from the New York office of J. O. Ross (350 Madison Avenue) or any of its branches.

◆

QUARTER-CENTURY CLUB FORMED BY 29 OLD-TIMERS OF LINDSAY WIRE W. CO.

The old-timers of The Lindsay Wire Weaving Company, Cleveland, recently formed a group called The Lindsay Quarter-Century Club. The 29 members represent 928 years of service, an average term of 32 years.

The meeting was held at The Cleveland Club. A handsome wrist watch was presented to each member by A. Fred Crossman, president of the company. Harry H. Field, treasurer of the company, was elected president of the Club.

Several years ago, the company presented service pins to 24 employees who had been with the organization for 25 years or more.

◆

▶▶▶ SALES AGENTS for the United States and Canada have been announced by the Kidder Press Company, Inc., of Dover, New Hampshire. A. E. Marconetti, Inc., 11 West 42nd Street, New York City, and C. P. Robinson, Graybar Building, both of New York City, will cover the eastern and midwestern states and the Canadian territory. Harry W. Brintnall Company, 430 Howard Street, San Francisco, will serve the far western United States and western Canada. The Brintnall Company maintains other offices at 746 East 117th Street, Los Angeles, and 2306 Third Avenue, Seattle, Washington. Kidder engineers are available for consultation on postwar problems.

◆

HERCULES POWDER CO.'S CHICAGO OFFICE IS NOW ESTABLISHED AS BRANCH

The Cellulose Products Department of Hercules Powder Company's Chicago office has been established as a regular branch office, and a revision of territories has been assigned to that department's sales and technical service personnel.

Fred K. Hankweiler, of the department's New York office, will be manager of the Chicago branch office, Cellulose Products Department. Clarence Gault, former Chicago representative for the Cellulose Products Department, has been transferred to a Hercules-operated ordnance plant, because of the critical need for technical men at the plant.

The Chicago territory will include the states of Minnesota, Wisconsin, Illinois, Indiana, Kentucky, and Missouri.

◆

▶▶▶ GOLD SERVICE PINS will be presented to 608 employees of the Standard Oil Company of Indiana during the first six months of 1945. These awards are for 10 to 40 years of service. Five employees will receive pins for 40 years of service.

◆

▶▶▶ A NEW SOUTHERN DISTRICT Office has been opened in Houston, Texas, by the Pigments Department of E. I. du Pont de Nemours & Company, Wilmington, Delaware. The states of Texas, Louisiana, Mississippi, and Alabama will be served by the new office, which will be in charge of Roy E. Troutman, as manager.

◆

MAJOR POOLE HONORED BY ATKINS CO. FOR 45 YRS. CONTINUOUS SERVICE

Major M. Poole, director of purchases of E. C. Atkins and Company, Indianapolis, Indiana, just completed his 45th year of continuous employment with the company. He was presented with a diamond studded Merit Award and the Award Certificate in appreciation of not only his long service but for the part he has played in the progress of the company through his expert knowledge of its products and his sound judgment and counsel in manufacturing methods.

Major Poole's experience dates back to a boy putting wooden plugs in crosscut handles, which in recent years have been replaced by malleable iron nuts, on through various departments of the factory, into the cost department, thence to the purchasing department. In 1920, he became purchasing agent of steel and other commodities used in the manufacture of saws and tools, and also office supplies. In 1940, he was elected to the board of directors and became director of purchases covering all purchases of the Indianapolis plant and its branches. He supervises the purchase of all materials used in the manufacture of armor plate and other war materials.

◆

▶▶▶ THE PLANT AND EQUIPMENT of the Grizzly Manufacturing Company, Los Angeles, California, has been purchased by Thermoid Company, of Trenton, New Jersey. The purchase includes the complete line of Grizzly oil field, industrial rubber and aviation products, and all patents covering those products—including inventories and accounts receivable. It is understood there will be no change in the Grizzly line of industrial and oil field products.

◆

MANHATTAN PIONEERS HAS 270 CHARTER MEMBERS

Two hundred seventy employees with 25 years or more of company service became charter members of "Manhattan Pioneers," an organization of employees who have been with The Manhattan Rubber Manufacturing Division for 25 years or longer.

The organization of the Pioneers was marked by a dinner held January 25 at Mountainview, New Jersey, attended by approximately 500 persons. Honored guests at the dinner were the company's first 50-year plant employees—Andrew N. Van Riper and Morris G. Fitts. Three other employees have been with the company for more than half a century. The old-timers were presented with gold pins studded with five diamonds, each diamond emblematic of five years of service beyond the 25-year mark. Sumner Simpson, president of Raybestos-Manhatton, Inc. (of which Manhattan is a division), made the presentation.

A letter from Harry E. Smith,

dependable source of the highest quality paper-making chemicals for almost half a century . . . . . .

These products, plus Hercules trained technical representatives, offer papermakers outstanding service.

PAPERMAKERS CHEMICAL DEPARTMENT

HERCULES POWDER COMPANY

INCORPORATED

WILMINGTON 99, DELAWARE

Boston, Mass. Holyoke, Mass. New York, N. Y. Atlanta, Ga. Savannah, Ga. Marrero, La. Detroit, Mich. Kalamazoo, Mich. Milwaukee, Wisc. Chicago, Ill. Portland, Ore. San Francisco, Calif. Los Angeles, Calif. In Canada: Hercules Powder Co. (Canada) Ltd., Freeman, Ont. P1-81

SUPERIOR PMC CHEMICALS

general manager of Manhattan accompanied the announcement. The letter stated that all Pioneer members would receive gold pins as soon as war restrictions would permit. Those who have served 30 years or more will receive pins studded with the appropriate number of diamonds.

◆

▶▶▶ THE INTEREST OF the United States Pipe and Foundry Company, Burlington, New Jersey, in the Duraloy Company, Scottdale, Pennsylvania, has been purchased by the Duraloy company. Officers of the latter company are: President, T. R. Heyward, Jr.; vice president in charge of operations, W. F. Furman; vice president in charge of sales, H. T. Harrison; secretary-treasurer, F. S. Wynans; plant superintendent, J. J. Baum.

◆

MATERIALS HANDLING MACH'Y MANUFACTURERS CONFERENCE

A two-day Materials Handling Machinery Manufacturers Conference was held in Pittsburgh recently. Seventy delegates attended, representing 36 materials handling equipment producers and two domestic and foreign government departments.

The conference was sponsored by the Westinghouse Electric and Manufacturing Company. J. P. Jordan, of Westinghouse, arranged the conference program. The afternoon of the first day was turned over to the Electric Hoist Manufacturers' Association, with Sydney Buckley, president, acting as chairman. The afternoon of the second day was turned over to the Electric Overhead Crane Institute, with F. Solditt, vice president of Harneschfeger Corporation, acting as chairman.

Papers presented dealt with new ideas for materials handling, production increases possible through engineered materials handling, selection of motors for electric hoists, a-c. crane control schemes, and selection of electric traveling crane equipment.

Illustrated talks were presented by: Ward J. Heacock, Link-Belt Company; R. W. Eichenberger, Robins Conveyors, Inc.; Frank Lock, The Yale & Towne Manufacturing Company; M. E. Silberger, American Chain and Cable Company; and C. A. Mathias, Goodyear Tire & Rubber Company.

The conference was concluded with a banquet, with addresses by Sydney Buckley, president, Shepard Niles Crane & Hoist Corporation, and R. A. Neal, vice president of Westinghouse.

◆

DETREX CORP. MARKS ITS SILVER ANNIVERSARY

The first of a series of meetings to be held by Detrex Corporation, Detroit, took place in Detroit on January 12, the anniversary of the founding of the company in 1920. Members of the Detrex organization in the eastern region met at Hershey, Pennsylvania, on January 19 and 20. Western, Pacific, and southern regions have planned early meetings in honor of the occasion. To commemorate the anniversary, recognition is being given in the form of pin awards to all employees having five or more years of continuous service with the company.

At the Detroit meeting, Robert A. Emmett, president and chairman of the board and a member of the original partnership which started the business, traced the history of the company from the days when all manufacturing operations were performed in a small garage to the present time with the corporation occupying more than 120,000 square feet of floor area in its modern Detroit plant. He also announced the election of two Detrex executives to new posts: A. O. Thalacker becomes vice president and general manager, and E. W. Allison is now secretary of the company.

◆

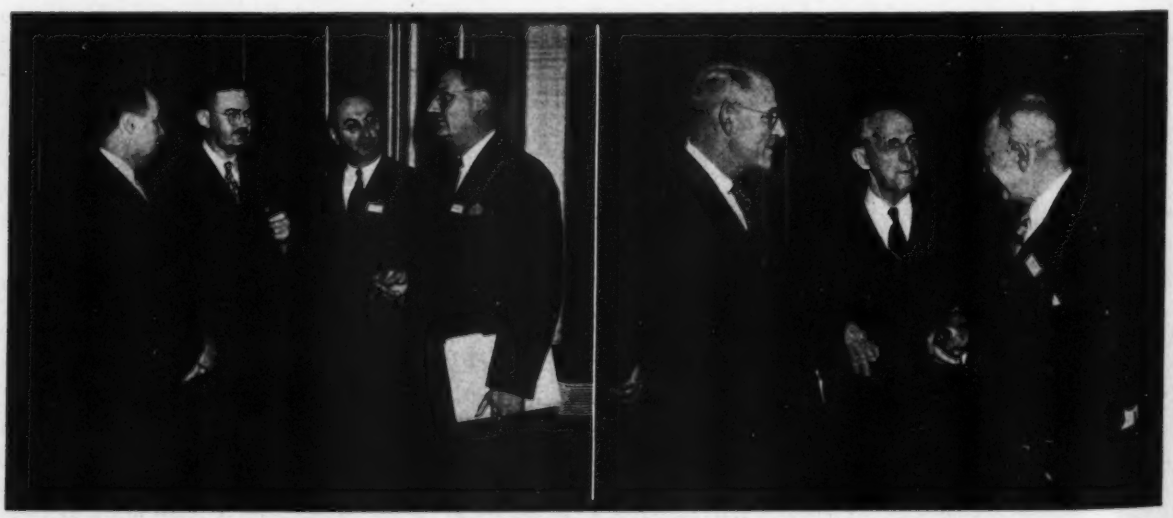
▶▶▶ IN ORDER TO FACILITATE the handling of its extensive export activities, Gardner-Denver Company, Quincy, Illinois, has established the main office of its export department in New York City. This arrangement has been made in contemplation of a material expansion in export sales activities. G. V. Leece heads the division which is located in the Woolworth Building.

◆

THE ATKINS PIONEER CLUB MARKS 39th ANNIVERSARY

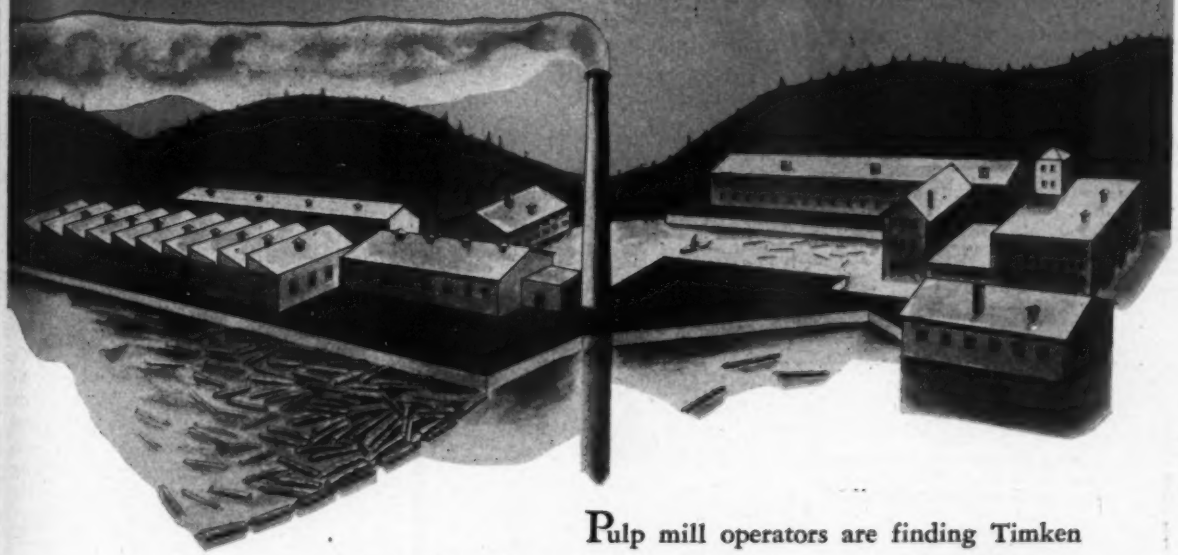
The Atkins Pioneers, 361 of them, celebrated the thirty-ninth anniversary of that organization on January 27 with a banquet and entertainment at the Claypool Hotel, Indianapolis, Ind.

The club is composed of employees of E. C. Atkins and Company, Indianapolis, who have been with the



At the Materials Handling Conference in Pittsburgh: LEFT (L. to R.)—E. G. Forgy, manager Control Application Section, Westinghouse; Edgar C. Rice, vice president, Whiting Corp.; C. Henry Schramm, chief engineer, Shaw Box Crane and Hoist Div., Manning, Maxwell & Moore, Inc.; F. M. Blum, manager crane sales, Harneschfeger Corp. RIGHT—R. A. Neal, vice president, Westinghouse; Sydney Buckley, president, Shepard Niles Crane & Hoist Corp.; Bernard Lester, assistant manager Industrial Sales, Westinghouse.

Timken Alloy Evaporator Tubes Offer Maximum Tube Life Per Dollar Invested



Pulp mill operators are finding Timken Seamless Tubes the answer to evaporator tube problems. Timken 5% Nickel Tubes, used in place of carbon steel, pay dividends in longer life. Timken Stainless Steel Tubes are used successfully where maximum protection is demanded.

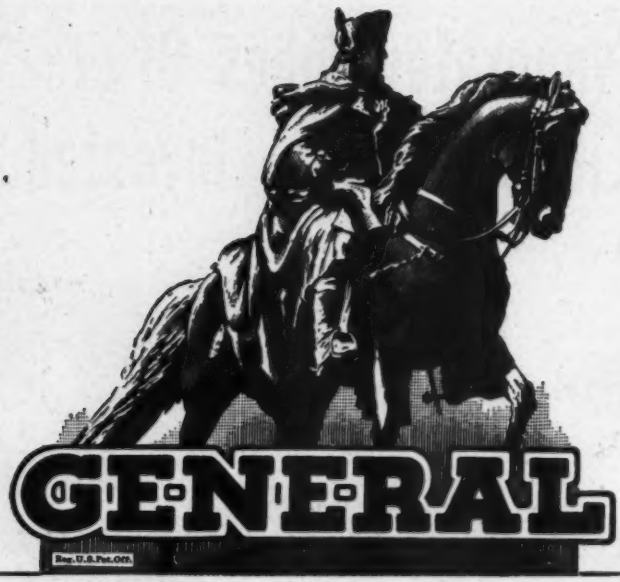
The secret of the dependable service offered by Timken Seamless Tubes is check and double check of every production step. These careful control measures begin in the melt shop and are carried on through the tube mill to finished tube inspection.

To get greater production and greater profits specify Timken Seamless Steel Tubes. If you wish . . . a member of our technical organization will be glad to recommend the proper tube for your mill. Steel and Tube Division, The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

SEAMLESS STEEL TUBES



RODA

High grade gas, by-product and steam coal from Wise County, Va., on the Interstate Railroad.

DENDRON

High grade gas, by-product, steam and domestic coal from Wise County, Va., on the Interstate Railroad.

STONEGA

High grade, high volatile steam and by-product coal from Wise County, Va., on the Interstate Railroad.

PREMIX STOKER

A laboratory controlled product blended to meet exacting stoker requirements. From Wise County, Va., on the Interstate Railroad.

COKE

Roda and Stonega from Wise County, Va., and Connellsville Coke from Pennsylvania.

CRITERION COAL

High grade gas, by-product, steam and domestic coal—Pittsburgh seam from Irwin Basin, Westmoreland County, Pennsylvania, on the Penna. Railroad.

CROZER

Genuine Third Vein Pocahontas from McDowell County, W. Va., on the Norfolk & Western Railroad.

Admiralty Coal

Genuine New River Smokeless, Beckley or Sewell seam from Raleigh County, W. Va., C. & O. and Virginian Railroads.

Old Kentucky

Hazard No. 4 and No. 7 steam and domestic coal from Wiscoal, Knott County, Kentucky, on the L. & N. Railroad.

CHARMCO

Unexcelled Steaming Coal from the Fire Creek Seam in Greenbrier County, W. Va., originating on the N.F.&G. R.R.

ANTHRACITE—Hazle Brook Premium . . . Raven Run

Our personnel with the experience gained through long and varied marketing activity assures proper application of one of the above brands and effective servicing of any fuel requirement.

General Coal Company

123 SOUTH BROAD STREET, PHILADELPHIA 9, PA.

BRANCHES:

BLUEFIELD, W. VA. BOSTON BUFFALO CHARLOTTE, N. C.
CINCINNATI DETROIT NEW YORK NORFOLK PITTSBURGH

company 20 years or more. Of the total membership, 16 have been employed 50 years or more. The oldest in point of service is Albert J. Hert, who began work in 1885 and retired last September, completing 60 years of continuous service. He is the oldest living member since the death in 1944 of the late Henry C. Atkins.

◆

SUBSIDIARY FOR GREAT BRITAIN AND EIRE IS ANNOUNCED BY HERCULES

A subsidiary of Hercules Powder Company, Wilmington, Delaware, has been created to distribute technical information on its chemical products in Great Britain and Eire. The new company is known as the Hercules Powder Company, Ltd., and offices will be maintained at 140 Park Lane, London. Cornelius H. B. Rutteman, managing director, will be in charge.

Hercules has been selling chemicals in Great Britain for 25 years, and throughout the period its technical representatives have been assisting distributors and customers in the utilization of these chemicals. Mr. Rutteman has been the company's resident representative in London since 1939.

Manufacturing operations of the Hercules Paper Makers Chemical Department will be continued at Erith, England.

◆

▶▶▶ A NEW PLANT for the manufacture of commercial alum is being built by the American Cyanamid Chemical Corporation, New York City, on a forty-acre tract at Schenk, just outside the city limits of Hamilton, Ohio.

The Corporation (a unit of American Cyanamid Company) operates seven other plants for the manufacture of alum in widely separated locations.

ARMY - NAVY "E" AWARDS

Second Star

The Cochrane Corporation, Philadelphia, has been awarded the second star for its "E" pennant. The first award was granted the company in February of last year.

Third Star

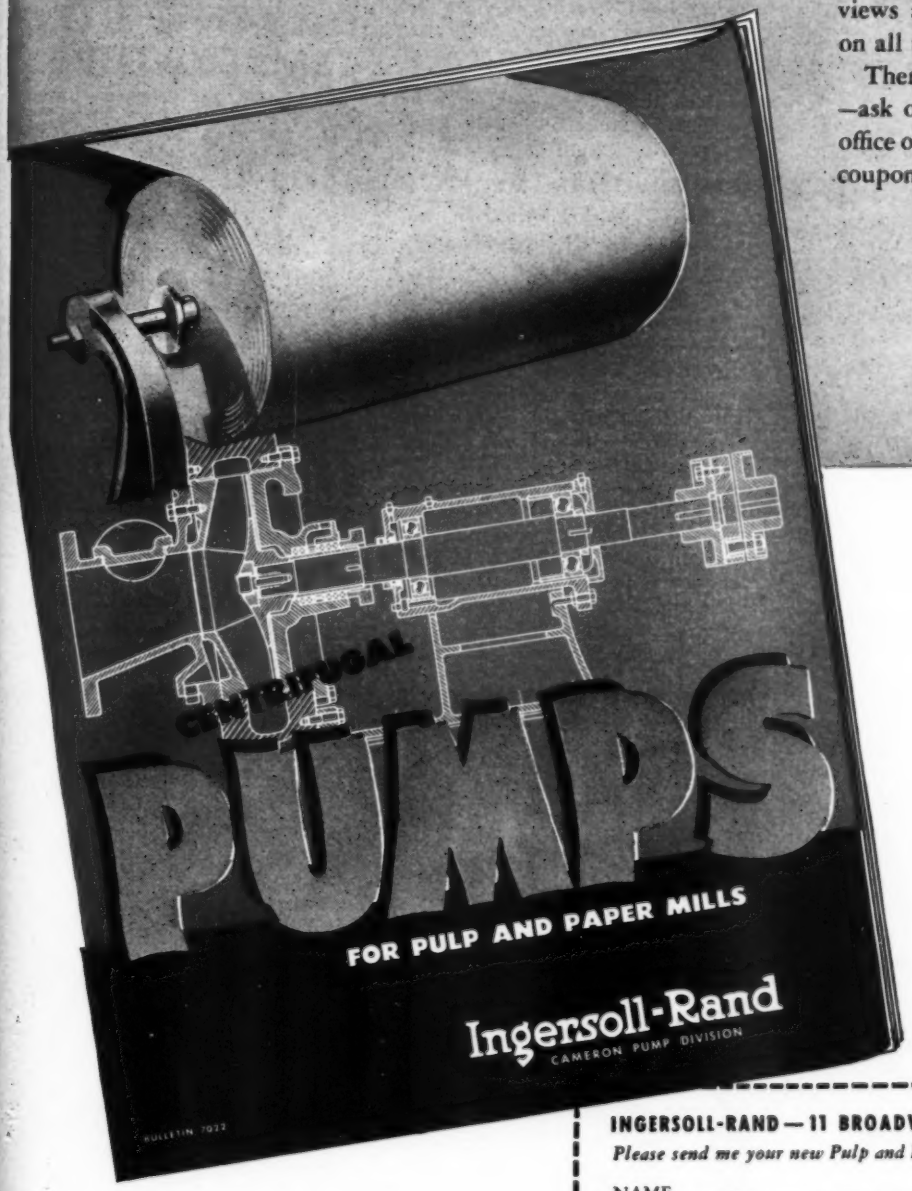
The "E" pennant of The Bauer Bros. Company, Springfield, Ohio, now has three stars. The third award was given the company in January.

Send FOR THIS NEW CATALOG

This new catalog describes and illustrates Ingersoll-Rand Centrifugal Pumps for every use in pulp and paper mills. Photographs and cross-sections show the construction of stock pumps, acid pumps, liquor pumps, water, general service and boiler-feed pumps.

In addition there is a general flow chart for pulp and paper mills, many installation views and capacity data on all the pumps.

There is a copy for you—ask our nearest branch office or mail the attached coupon.



10-589

INGERSOLL-RAND — 11 BROADWAY — NEW YORK 4, N. Y.

Please send me your new Pulp and Paper Mill Catalog, No. 7022.

NAME_____

COMPANY_____

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CITY_____ ZONE____ STATE_____

Ingersoll-Rand

CAMERON PUMP DIVISION

11 BROADWAY, NEW YORK 4, N. Y.

S A F E T Y

SAFETY SCORES

▶▶▶ PERFECT SCORES are recorded for fifteen mills at the close of December, the fifth month in the 1944-45 Paper Industry Safety Contest. The following list of mills have a perfect record:

Division I—Pulp and Paper Mills

Group A
Price Bros. & Co., Ltd., Riverbend, P. Q.

Group B
(None)

Group C
Container Corp. of America, Carthage, Ind.

Group D
Certain-teed Products Corp., Buffalo.
Central Fibre Products Co., Denver.
Strathmore Paper Co. (Woronoco Mill No. 1), West Springfield, Mass.
E. I. du Pont de Nemours & Co., Newhall, Wilmington, Del.

Division II—Paper and Board Remanufacturing

The Flintkote Co., Chicago Heights Plant, Ill.
*Container Corp. of America, Cleveland.
Ft. Wayne Corr. Paper Co., Chicago.
Bird & Son, Inc. (Roofing Plant), Shreveport, La.
Thilmany Pulp & Paper Co. (Bag Mill), Kaukauna, Wis.
Kimberly-Clark Corp. (Atlas Mill), Appleton, Wis.
Iowa Fibre Box Co., Keokuk, Iowa.
Bay West Paper Co., Green Bay, Wis.

(*) December report missing.

◆

EMPLOYER'S TROPHY WON BY RIVERSIDE DIV. OF AWP

An excellent low-accident experience both in frequency and severity won for the Riverside Division of the American Writing Paper Corporation, Holyoke, Massachusetts, the Employer's Trophy.

The Division's achievement was just short of a perfect goal, with a frequency rate for 1944 of 2.1 and a severity rate of .35. The Trophy was presented to Robert W. Pattison, superintendent of the Division, by A. S. Wilson, safety officer of the AWP.

◆

▶▶▶ THE UNITED STATES office of Civilian Defense has presented the National Security award to the Wood River refinery of Standard Oil Company of Indiana in recognition of its superior standard all protection and securtiy. The certificate states that "effective joint efforts to safeguard production, employees, and property have made possible this achievement, which stands as a mark of distinction in the nation's war effort."

◆

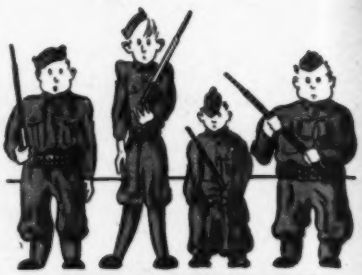
▶▶▶ DUST-PROOF goggles have been developed by the Quartermaster Corps of the War Department after long and intensive research. The lens is a single piece of shatterproof plastic. A lens can be removed from the frame for quick replacement with another lens that accompanies every pair of goggles in a special envelope.

◆

DISABLED VETERANS MAY BE 100% EFFICIENT IF PLACED IN PROPER JOBS

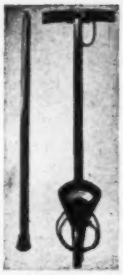
The pulp and paper industry of Canada is doing its full share with other industries to co-operate with the Government in placing disabled war veterans in jobs where, in the words of the superior of the casualty section, their efficiency will be 100 per cent.

To date more than 1,300 amputation cases and 55 blind cases of this war have been returned successfully to civilian life. Among examples cited is the following: A former employee of one of the mills lost both hands in retrieving a loose grenade which exploded as he attempted to hurl it out of danger. Using special mechanical fingers, operated by shoulder movements, he is now back at the same mill as plant supervisor, a better job than the one he held in the same plant before the war.



IS THIS THE PICTURE-GRAPH OF YOUR

DRYING ROLL TEMPERATURES?



The maintenance of proper progressive temperatures in the train of drying rolls will go a long way to prevent spots, curl, cockle and blisters. We suggest the routine use of the Cambridge Surface Pyrometer for such temperature determination. It is an accurate, sturdy, quick-acting instrument ideally suited for temperature check of still or moving rolls. Write for bulletin 194-S.

The *Cambridge* is made in a hand model and with an extension to reach those hard-to-get-at places.

CAMBRIDGE INSTRUMENT CO., Inc.
3732 Grand Central Terminal
New York 17, N. Y.

CAMBRIDGE
SURFACE PYROMETERS

A. S. Wilson, safety officer of the American Writing Paper Corp., Holyoke, Mass. (extreme right), presenting Employer's Trophy to Robert N. Pattison (second from right), in recognition of the excellent safety record of the Company's Riverside Division, of which Mr. Pattison is superintendent. Heads of Riverside departments pictured are: (L. to R.) Seated—Mrs. Alice Geran, Richard Wiley, John Waters. Standing—Walter Freyer, Leonard Horn, and Harold Stewart, assistant superintendent.

The ~~"art"~~ *Science* of greasemaking— and you, the "user"

NOT MANY YEARS AGO, the "art" of greasemaking was handed down from father to son, or from the master greasemaker to his favorite apprentice. The greasemaker was a super-chef—his recipes a secret. Without

The "art" of greasemaking was handed down from father to son.

the magic word known only to the old-timer, the same ingredients and seemingly the same methods he used, produced anything but the expected results in the hands of the uninitiated apprentice.

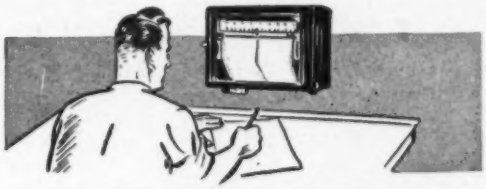
Today, that picture is greatly changed. Greasemaking

The master greasemaker was a super-chef—his recipes a secret.

is no longer an art but a science. The "know-how" of the old-timer is duplicated and improved upon in the chemist's laboratory.

Control of the various steps in the process, once dependent upon the experienced "eye" of the greasemaker, has been taken over by modern scientific instruments—accurate measuring and weighing devices, precision temperature control instruments, scientific mixing kettles, etc.

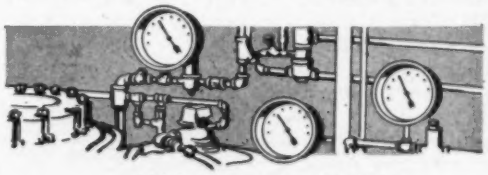
A high degree of skill is still required, but it is in the hands of thoroughly trained greasemakers, who, with accurate instruments and with laboratory formulae and methods, can predetermine the results of their



. . . accurate temperature measuring instruments.

labor and get uniform products that accurately meet specification requirements.

There was a time, too, when grease quality and consistency meant very little. The consistency of an axle grease on a wagon wheel had little effect on the speed of the wagon or life of the wheel. Today, however, high speed, precision anti-friction bearings, and heavily



. . . with laboratory formulae and methods.

loaded gears require accurate lubricant recommendations to save both power and wear.

All this explains why you will find the most advanced equipment and technique employed in the greasemaking department of Standard Oil. Only a small portion of the equipment is illustrated here. It can only indicate the extreme care and modern methods employed by Standard Oil to insure the highest quality and uniformity in the greases manufactured. And these include greases for practically every type of industrial application.

. . . scientifically designed grease kettles.

Standard Oil Lubrication Engineers will help you apply these products to give longer lasting protection to plant equipment and machines. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for a Lubrication Engineer.

Buy More War Bonds

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

★ LUBRICATION ENGINEERING

LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . .

NAMES *in the* NEWS

Personals

RETIREMENT OF OFFICIALS BRINGS CHANGES AT WEST VIRGINIA P. & P. COMPANY

The retirement of two officials of the West Virginia Pulp and Paper Company was announced on January 16. Thomas Luke, president, and Adam K. Luke, vice president and treasurer, retired after 53 and 56 years of continuous service (respectively) with the company. At the annual meeting of stockholders of the company both were re-elected. The directors then elected them chairman and vice chairman of the board for the ensuing year.

David L. Luke, Jr., was elected president of the company to succeed Thomas Luke. He has been a director since 1932 and a vice president since 1934. David Graham was elected treasurer to succeed Adam K. Luke. Lawrence W. Strattner and James W. Towsen were elected vice presidents.

The board of directors created an executive committee composed of the following directors: Thomas and Adam K. Luke, Edwin S. Hooker, Thomas H. Stirling, Paul B. Lacy, and David L. Luke, Jr. The policies of the company will be determined by the executive committee, which will report to the board.

◆

G. A. WARE REJOINS THE NEWS PRINT SERVICE BUR.

R. S. Kellogg, secretary of the News Print Service Bureau, announces that G. A. Ware has rejoined the Bureau as assistant secretary. Mr. Kellogg's announcement states that:

Nearly all Bureau members will remember the excellent work he (Mr. Ware) did from 1919 to 1930 in developing cost accounting methods in both mills and woods operations for the North American newsprint industry. The standards set at that time have been constantly referred to not only on this continent, but in many other places where newsprint mills are located. In addition to this work, Mr. Ware was also assistant secretary of the Bureau during that period of his service.

During the past fourteen years, he has been working in a still larger field, conducting a cost engineering service through the American Paper and Pulp Association for all branches of the pulp and paper industry. This consulting service will be continued and his service and assistance will still be available to those manufacturers who require such help.

Mr. Ware's return to the Bureau now brings him back with an increasingly broad understanding of manufacturing processes and methods which will be of especial benefit to newsprint manufacturers everywhere.

◆

B. F. HUNTER BECOMES CONSULTING ENGINEER WITH HONAN-CRANE CORP.

On January 1, B. F. Hunter became associated with the Honan-Crane Corporation, Lebanon, Indiana, as consulting engineer in charge of research and sales engineering. The Honan-Crane Corporation is a subsidiary of the Houdaille-Hershey Corporation.

Mr. Hunter came to Honan-Crane from the Gulf Oil Corporation and

B. F. Hunter

the Gulf Refining Company, where he had been chief lubrication engineer for the past 19 years. Prior to that, he was for six years with The Texas Company as chief industrial lubrication engineer.

In acquiring the services of Mr. Hunter, the Honan-Crane Corporation puts new emphasis on its program of scientific approach to oil purification as applied to modern industry. Mr. Hunter will direct the research work in the company's own laboratories at Lebanon, Indiana, as well as special projects and more exhaustive inquiry in leading research institutes. Functioning also as head of sales engineering, he will make his wealth of experience available to the company's oil purification engineers.

◆

F. L. MITCHELL APPOINTED TO SUCCEED WELDON AS HEAD OF CANADIAN WARTIME BOARD

F. L. Mitchell, of Montreal and Merritton, Ontario, has been appointed deputy co-ordinator of the pulp and paper administrations of the Wartime Prices and Trade Board to succeed R. L. Weldon, president of Bathurst Power and Paper Company, Bathurst, New Brunswick, who has resigned the position but who remains as special consultant.

Mr. Mitchell has been associated with the pulp and paper industry since 1921. He is a graduate of McGill University, and was operating manager for Alliance Paper Mills, Ltd., of Merritton, when he joined the staff of the Wartime Prices and Trade Board in 1942 as technical adviser to the pulp and paper administrations. It was in that same year that he became newsprint administrator for the Board.

◆

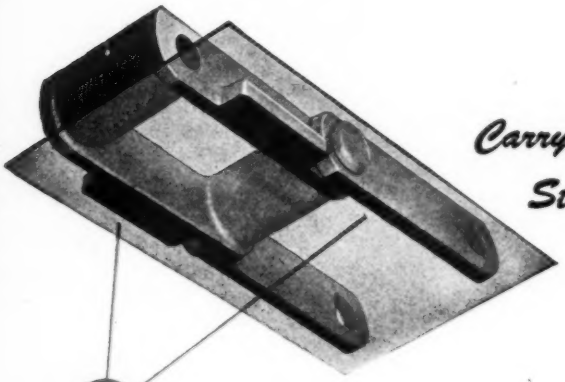
DR. CARL B. THORNE IS GIVEN HONORARY DINNER TO MARK HIS RETIREMENT

A dinner was held in Montreal, Canada, on December 28 in honor of Dr. Carl Bush Thorne, who has been vice president and technical director of Canadian International Paper Company. Dr. Thorne is retiring from active direction of the bleached sulphite operations of the company's mills at Hawkesbury, Ontario, and Temiskaming, Ontario, after continuous service of more than forty years with the company and its predecessors. He joined the old Riordon Paper Company in 1903, soon after his arrival in America from Norway.

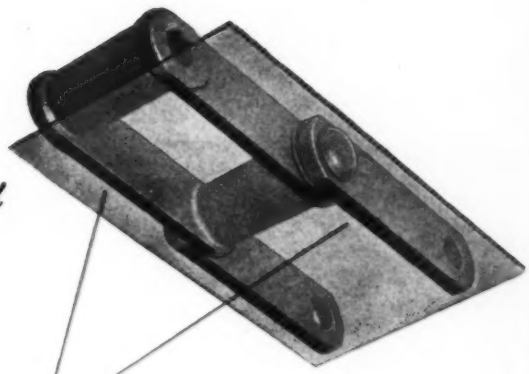
Dr. Thorne was known internationally. He was active in the formation of the technical section of the Canadian Pulp and Paper Association in 1915, and his contributions to the science of pulp manufacture were recognized in 1938 when the Technical Association of the Pulp and Paper Industry (TAPPI) awarded to Dr. Thorne its gold medal.

Compare the WEARING SURFACE of JEFFREY PW 132 CHAIN with ORDINARY 132 CHAIN

Carrying Strand

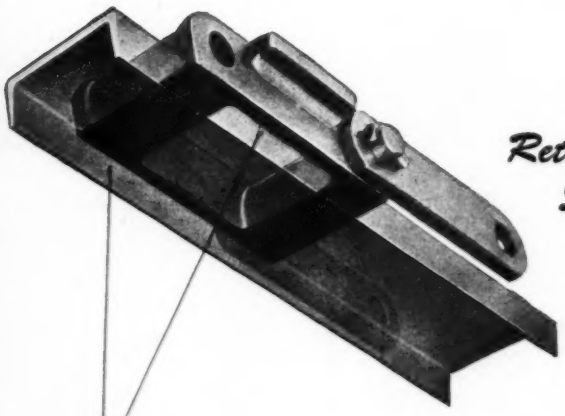


19.7 SQ. IN. of actual sliding surface per foot of PW 132 chain

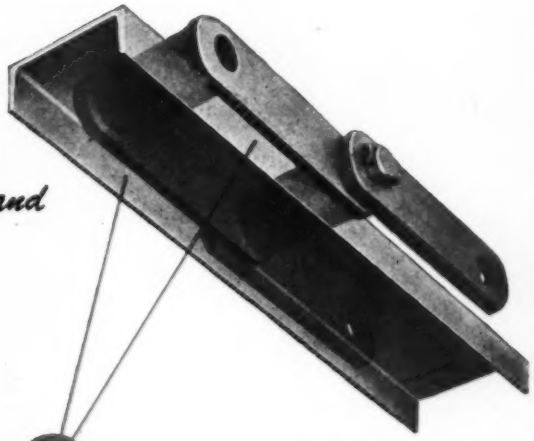


13.6 SQ. IN. of actual sliding surface per foot of ordinary No. 132 chain

Return Strand



20.2 SQ. IN. of actual sliding surface per foot of PW 132 chain



5.6 SQ. IN. of actual sliding surface per foot of ordinary No. 132 chain

No. 1226 Chain also available in PW type

JEFFREY

Established in 1877

THE JEFFREY MANUFACTURING COMPANY

823-99 North Fourth Street, Columbus 16, Ohio

Sales Office in Principal Cities

JEFFREY PRODUCTS

Belt Conveyors
Chip Conveyors
Crushers (salt cake)
Elevators (bucket)
Feeders (lime, salt cake)
Log Haul-ups
Portables
Re-chippers
Shredders
Unloaders (barge)

At the dinner were 29 persons with a company service record of 21½ years. The Doctor will continue to reside in Hawkesbury, where he expects to devote himself to research in his chosen field of cellulose chemistry and its industrial applications. He will remain a vice president of the company.

◆

▶▶▶ *George O. Boomer,* has been elected president of The Girdler Corporation, Louisville, Kentucky, succeeding Walter H. Girdler, Sr., who passed away January 7. Mr. Boomer also will remain vice president and

George O. Boomer

member of the board of the firm's affiliate, Tube Turns, Inc. He has been a member of the board of The Girdler Corporation since it was founded, and executive vice president since 1938.

◆

▶▶▶ An award from the Suggestion sub-committee of the Labor Management Committee has been given to *Mrs. Doreen Blanchard,* an employee of the Powell River Company, Ltd., Powell River, British Columbia. A cash award was given to Mrs. Blanchard for her suggestion to raise the level of the platform at the chipping machine. An additional award was also made to *W. L. Bertram* for his improvement of the spreader bar on No. 7 paper machine.

◆

▶▶▶ The appointment of two vice presidents was announced following meetings of the Ontario Paper Company, Thorold, Ontario, and Quebec North Shore Paper Company, Baie Comeau, Quebec. *D. W. Ambridge* was named third vice president and assistant general manager, while *Major-General W. B. Kennedy* becomes fourth vice president in charge of woods operations.

◆

▶▶▶ Superintendent *Claude Smith,* of the Nonotuck Division of American Writing Paper Corporation, Holyoke, Massachusetts, has resigned to become superintendent of the Esleeck Paper Company, Turners Falls, Massachusetts. He will be succeeded by *Francis A. Gillespie,* of Holyoke, who has been assistant superintendent. Mr. Smith was given a testimonial dinner party at the Hotel Roger Smith in Holyoke, and a war bond was presented to him by Toastmaster Robert Pattison in behalf of the Eagle-A executives and other employees present. Officials of the company attended the dinner.

◆

▶▶▶ The appointment of *William R. Hill* as general sales manager of industrial and commercial sales of centrifugal, reciprocating and paper mill pumps is announced by the Warren Steam Pump Company, Inc., Warren,

William R. Hill

Massachusetts. Mr. Hill comes to Warren after nine years with the Carrier Corporation, Syracuse, New York.

Mr. Hill studied mechanical engineering at Stevens Institute of Technology and M.I.T.

◆

▶▶▶ In line with the company's expansion program, the Central Paper Company, Inc., has appointed *E. W. Pitt* director of sales. Mr. Pitt comes to Central from the Sherman Paper Products Company, with which he had been connected for fourteen years. His last position there was general sales manager. In his new connection, Mr. Pitt will spend some time in the company's general offices familiarizing himself with details of his new work. Afterwards, he will visit the district offices of the company and become acquainted in the various territories.

◆

▶▶▶ The Controllers Institute of America recently elected to membership *Wesley C. Ahlgren,* assistant secretary-treasurer of Bird and Son, Inc., East Walpole, Massachusetts.

◆

▶▶▶ The position of director of the Analytical Department of Foster D. Snell, Inc., Brooklyn, has been taken over by *Dr. D. Gardner Foulke.* In his new position, Dr. Foulke will have complete charge of analytical work with the responsibility of developing necessary technics for new and unusual types of analyses.

◆

▶▶▶ The appointment of *Jose Maria Fierro* as its general representative for all of Mexico has been announced by the Blackmer Pump Company, Grand Rapids, Michigan. He has been acting as the company's representative in Mexico City and the adjoining districts.

◆

▶▶▶ At a recent meeting of the board of Continental Can Company, *Hans A. Eggerss,* president of The Container Company, Van Wert, Ohio (a wholly-owned subsidiary of Conti-

Hans A. Eggers

nental Can Company, Inc.), was elected to the board and made a vice president in charge of the Paper Container Division of Continental Can Company.

STOP RUST
THE "STAINLESS WAY"

Now is the time to plan for a higher peacetime yield of cleaner, more salable paper at lower over-all cost.

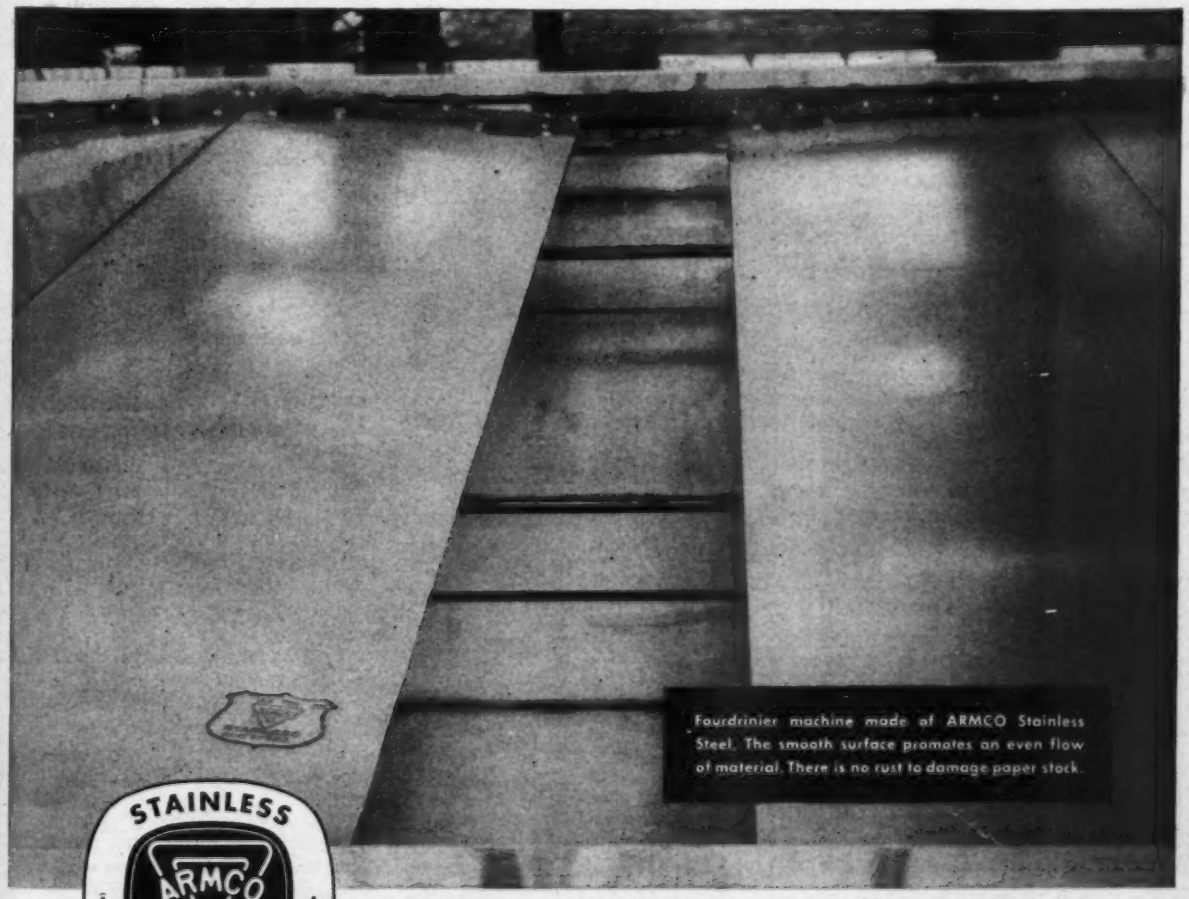
One sure way is to put equipment made of ARMCO Stainless Steel in your "future" budget. Many mill operators know by experience with prewar equipment that this rustless steel helps boost production and profits.

Yet corrosion resistance is only one advantage. The hard smooth surface of ARMCO Stainless keeps slime-producing bacteria on the move. Slime has little chance to hang on. This means fewer wash-ups and interruptions, less spoilage. What's more, the smooth surface of Stainless promotes rapid flow of pulp.

Maintenance costs are low too. Generally, a weekly wash-up will keep your equipment free of slime and other deposits.

You can keep your quality and production standards at a high level when you specify ARMCO Stainless Steel processing equipment. Ask us about it when you plan your new-equipment budget. The American Rolling Mill Company, 661 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION



Fourdrinier machine made of ARMCO Stainless Steel. The smooth surface promotes an even flow of material. There is no rust to damage paper stock.

STAINLESS ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

LABOR ADVISER TO PRES. OF ST. REGIS IS NEW POST OF A. L. SMALLEY

Labor adviser to the president is the post just filled by St. Regis Paper Company, New York City, with the appointment of A. L. Smalley. R. K. Ferguson is president of the company.

Mr. Smalley is eminently fitted to assist in effecting and maintaining close understanding and co-operation between management and labor. Prior to the war he was active in the ranks of organized labor, and served on the national executive committee under D. W. Tracy, now assistant secretary of labor.

◆

▶▶▶ New appointments have been announced in the executive sales staff of Sherman Paper Products Corporation, Newton Upper Falls, Massachusetts. *George H. Stucke* has been advanced to general sales manager. He will continue in his duties as sales manager of the industrial division, assisted by *J. Arthur Hardigan*, who has been promoted to the position of sales manager of the display division, and *P. E. Sheehan*, sales manager of the specialties division.

◆

DR. JAMES OPENS CHICAGO OFFICE AND LABORATORY IN INDUS. MICROBIOLOGY

A consulting office and laboratory in industrial microbiology has been opened at 189 West Madison Street, Chicago, by Dr. L. H. James, B.Sc., Ph.D.

Dr. L. H. James

Dr. James has had twenty years of experience, which includes close contacts with industry, the Food and Drug Administration, the Federal Trade Commission, and the U. S. Patent Office. He recently directed investigation of wartime problems in industrial microbiology for the Office of Scientific Research and Development.

Since 1937, Dr. James has been professor of bacteriology and head of the department at University of Maryland, College Park, and director of numerous research projects, including studies on antiseptics, disinfectants, factory sanitation, etc. Certain investigations begun at the university will be continued in the new laboratory. The work will include the control of bacteria, yeast and mold in factory processes, disinfectants, industrial fermentations, and the microbiology of various types of food products.

◆

▶▶▶ *Charles C. Bray* returns to the De Laval Steam Turbine Company as assistant to the manager of the Worm Gear Division. Mr. Bray has served as metallurgist for the special steel department of Joseph T. Ryerson & Sons, prior to which he worked as a worm gear sales engineer in the De Laval Chicago office.

Charles C. Bray

◆

▶▶▶ The appointment of *C. B. ("Baldy") Smith*, of Kalamazoo, Michigan, as sales engineer has been announced by The Noble & Wood Machine Company, Hoosick Falls, New York. Mr. Smith will represent Noble & Wood in the states of Michigan, Wisconsin, and Minnesota. *Jacob Parent*, who formerly covered that territory, has moved to Richmond, Indiana, where he will make his headquarters, representing Noble & Wood in the states of Ohio, Illinois, and Indiana.

E. R. GAY RETURNS TO HIS DUTIES AT ST. REGIS

Edward R. Gay, who recently resigned as assistant vice chairman of the WPB, has returned to his duties as vice president of the St. Regis Paper Company.

Mr. Gay was one of the first of the many executives who have given up their peacetime positions to assist in directing the nation's economy during the war period. He served first as chief of the Industrial Programs Branch of the Office of Civilian Supply. He later became director of the General Commodities Division, and, in May, 1944, was appointed assistant vice chairman of the Board.

Edward R. Gay

◆

APPOINTMENTS ANNOUNCED BY BUFFALO FORGE CO.

New appointments announced by the Buffalo Forge Company, Buffalo, New York, are:

N. R. Johnson, who has been connected with the company for 28 years, has been made factory manager. For several years he has been general purchasing agent.

H. D. Hebard, who has been with the company 24 years, mostly in sales work, has been appointed director of purchases. For the past three years, he has been assistant to Mr. Johnson in the purchasing department.

◆

▶▶▶ Announcement is made by Northern Equipment Company, Erie, Pennsylvania, of the appointment of *W. L. Hunter* as chief engineer. Mr. Hunter will supervise engineering, design, and research. *H. A. Schlieder*, associated with the company for 8 years, has been made assistant chief

FOR *Whiteness* IN BONDS, WRITINGS, BOOK & LEDGERS

For many years Helmerco Blue has been a standard product for tinting white bond, writing, book and ledger papers. Added at the beater, it has excellent working properties and good light fastness. Fine light blues in the same group of papers can also be produced with Helmerco Blue.

In the tinting of paper coatings, Helmerco Blues produce the much desired high white shades in any formula.

Our Technical Service Department will be glad to work with you in developing special dyes for specific purposes or in advising you on the use of H&M colors.

RANGE OF SHADES FROM RED TO GREEN HELMERCO BLUE	
M 4 R Conc.	2 G B Conc.
M 2 R W Conc.	M 2 G Conc.
M G W Conc.	M 4 G Conc.
M G Conc.	M 5 G

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CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

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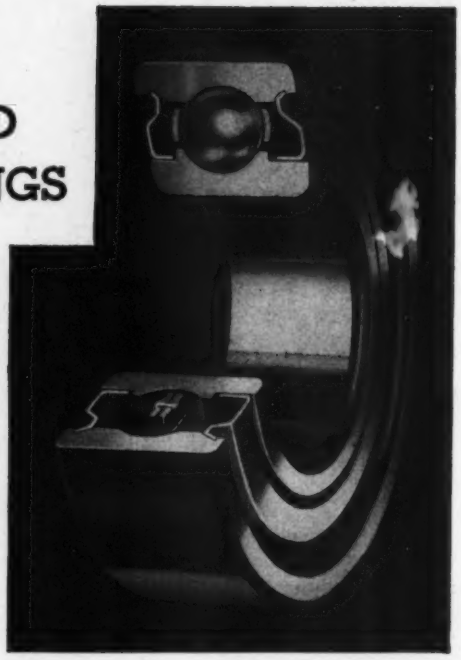
SELF-SEALED BEARINGS



"9000-DD", with Double Metal Seals, here shown; also made as "9000-D" with Single Metal Shield.

"NORMA-HOFFMANN"
PRECISION BEARINGS
BALL, ROLLER AND THRUST

LARGER GREASE CAPACITY NO SEAL DRAG

IN "9000" SERIES (Feltless)

Interchangeable in dimensions with felt seal bearings.

Employs simplified, inwardly extending, flanged metal shields which do not rotate and cannot "foul" other rotating seal parts.

Seals are highly efficient in retaining grease in either horizontal or vertical position.

Simple seal occupies less space within bearing than felt seal, PROVIDING GREATER GREASE CAPACITY AND A MORE LASTING LUBRICANT SUPPLY.

Metal seals, though close fitting, clear recess on inner ring, ELIMINATING "DRAG" OR FRICTIONAL RESISTANCE and power loss, and providing higher starting speeds and increased efficiency. Seals cannot wear and are permanently effective.

Totally sealed against foreign matter, providing absolute cleanliness at all times.

TO WIN THE WAR—WORK—FIGHT—BUY WAR BONDS!

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U.S.A.

engineer. *H. H. Weining*, who has been with the Northern company since 1926, has been appointed director of research.

◆

▶▶▶ The office of secretary of the Hammermill Paper Company, Erie, Pennsylvania, has been filled with the appointment of *Bertram E. Claridge*. He succeeds William F. Bromley, who retired.

◆

▶▶▶ The position of general manager of J. R. Booth, Ltd., Ottawa, Ontario, has been relinquished by *Howard D. Hyman*. Mr. Hyman becomes vice president of Alexander Fleck, Ltd., manufacturer of Dilts Machine Works' equipment in Canada, as well as the Hydrapulper, Classifiner, and other Cowles equipment.

◆

▶▶▶ Since 1937 *A. O. Thalacker* has held the executive positions of assistant secretary, and later secretary, of Detrex Corporation, Detroit. He has now been elected to the position of vice president and general manager. E. W. Allison, who has been in the legal department of the firm since 1941, is now secretary.

▶▶▶ With headquarters in San Francisco, California, *Elliott R. Vinson*, of Alameda, California former electronics technician at the U. S. Naval Air Station, Alameda, has been appointed electronic tube specialist for the Pacific Coast district of Westinghouse Electric and Manufacturing Company. Mr. Vinson has a broad background as an aircraft radio and material technician.

Elliott R. Vinson

▶▶▶ The Philco Corporation, Philadelphia, announces the election of *Edward F. Theis* as a vice president of the company. Mr. Theis was connected with Philco from 1938, when he was Works Manager of the Refrigerator Division, until 1942 when he went with Curtiss-Wright Corporation as manager of its Indianapolis propeller plant. He returned to the company February 1, and in his new position he will be in charge of refrigerator production.

◆

▶▶▶ *Rae F. Bell*, former first vice president of the A. O. Smith Corporation, Milwaukee, Wisconsin, has been elected chairman of the board to succeed the late L. R. Smith. Mr. Bell has been a board member since 1925. He started with the corporation in 1923 as a vice president, and in 1937 was elected first vice president.

◆

▶▶▶ At the beginning of the war, *Commander P. F. Beaudry* left his position as chief engineer of the Rolland Paper Company, Mont Rolland, Quebec, to enlist in the Canadian Navy. He has now been appointed director of the Ecole Polytechnique of Montreal, succeeding Prof. A. Circe.

FOR HIGHEST

Efficiency

IN THE COLORING OF PAPER STOCKS

Use

MAPICO

PIGMENTS

PURE PRECIPITATED OXIDES OF IRON

Qualities which make these fine colors helpful to the paper maker are:

Permanent color
High tinting strength
Good fiber adhesion
Light, acid and alkali proof
Soft texture—non-abrasive

MAPICO *Yellows*

Five standard shades—light to dark—yielding clean clear creams, ivories and buffs.

MAPICO *Reds*

Rich deep reds which extended with white produce desirable shades of orchid, coral, pink

ALSO BROWNS AND BLACK

If you are unable to obtain all the Mapico pigments you desire, war-time restrictions are responsible.

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Samples and complete technical information furnished on request

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EVERLASTING FASTENINGS

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BECAUSE of these large and varied stocks, Harper is known as "Headquarters for Everlasting Fastenings" . . . "Your Logical Source" of non-ferrous and stainless bolt and nut products.

At Harpers the buyer finds three unique and distinct advantages. First, large stocks of all types of fastenings such as bolts, nuts, screws, washers, rivets and specials; second, fastenings in all the commercial non-ferrous and stainless alloys except aluminum, e.g. brass, copper, naval bronze, silicon bronze, Monel and stainless steel; third, large stocks of metals in bars, rods, wire, strip and other basic forms from which special fastenings can be quickly made according to specifications.

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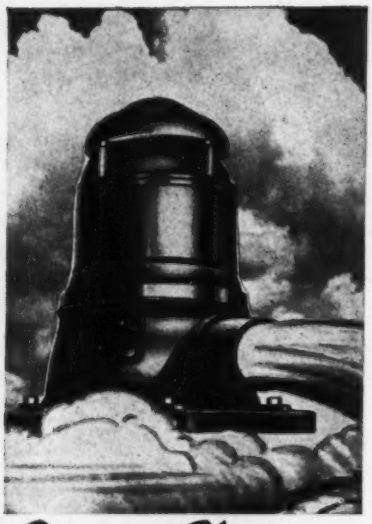
BRASS • BRONZES • COPPER
MONEL • STAINLESS



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OF OUR NATION'S GREAT INDUSTRIES

Great industries, following in the footsteps of hundreds of towns and cities, give first choice to Layne installed Wells and Layne built Vertical Turbine Pumps. Industrial engineers have found that there is no "just as good." They have found that Layne's reputation for quality and efficiency equipment is absolutely unmatched. If you should wonder why, check just a few of the major reasons:

Layne is the Nation's oldest and most successful pioneer in designing and building Vertical Turbine Pumps. They developed and hold exclusive patents on many tremendously important efficiency features.

Next, Layne perfected a type of Well installation that produces more water, saves costly horsepower and invariably lasts longer.

Every Layne Pump is precision-built in Layne's own Engineer supervised factory. All materials: iron, steel, bronze, brass, nickel, etc., are of a uniformly extra high quality.

To avoid excessive repair expense, high operation cost, shorter life and possible failure at a critical time, place your confidence in, and demand, Layne Wells and Vertical Turbine Pumps. For late literature, address, Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

LAYNE PUMPS — fulfill every need for producing large quantities of water at low cost from wells, streams, mines or reservoirs. Send for literature.

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LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

Necrology

WILLIAM H. WALDRON

At his home in New Brunswick, New Jersey, William H. Waldron, president of John Waldron Corporation, passed away February 1.

Mr. Waldron was 79 years of age. He entered the family business in 1886 following his graduation from Rutgers University. The company is widely known for its manufacture of paper machinery. Mr. Waldron has traveled widely. He was a member of the American Society of Mechanical Engineers and the Holland Society of America. He is survived by his widow.

◆

ESHELBY F. LUNKEN

While preparing to attend the annual dinner of the National Association of Manufacturers where he was to be a guest of honor, Eshelby F. Lunken, president of Lunkenheimer Company, Cincinnati, Ohio, was fatally stricken on January 25. The Lunkenheimer Company was one of the Cincinnati firms which founded the NAM.

Mr. Lunken was 54 years of age. He was a son of Edmund H. Lunken, who at the time of his passing in July, 1944, was chairman of the board. He was connected with The Lunkenheimer Company for 35 years and served as president 26 years. He was a grandson of Frederick Lunkenheimer, founder of the company.

◆

ARCHIBALD C. SCRIMGEOUR

Well known in the paper industry for many years, Archibald Cree Scrimgeour passed away January 15, at the age of 71.

More than 50 years ago, Mr. Scrimgeour joined the Central Paper Company (Muskegon, Mich.) and for a time was vice president and secretary of the Manufacturers' Paper Company, a subsidiary. The latter was subsequently absorbed into the parent company and he became general manager of the New York office.

He is survived by a daughter.

◆

▶▶▶ An old and valued employee of Oliver United Filters, Inc., passed away at Springfield, Ohio, on January 26. *William Mitchell Gardella* had been with the company since 1916 and had served for many years as sales development engineer. He had traveled all around the world installing and starting up Oliver United Filter installations and studying filter operations in other countries. He is survived by his widow, a daughter, and son, William Bert Gardella, who is with the company in a sales engineering capacity.

◆

ERVIN T. FLEMING, SR.

The paper industry of the south lost one of its most progressive and spirited leaders with the passing of Ervin T. Fleming, Sr., president and general manager of Fleming & Sons, Inc., Dallas, Texas. He passed away suddenly on Christmas morning at the age of 72 years. Mr. Fleming was born in California. He spent his boyhood and young manhood in Washington and Oregon where his family was engaged in the paper business. In 1893, his father purchased a small paper mill on the outskirts of Dallas. This mill, known as the Oak Cliff Paper Mill was the first paper mill in the Southwest. Because the papermaking industry in the Northwest was highly advanced at that time, the Flemings drew upon their vast experience to work improvements and

Ervin T. Fleming, Sr.

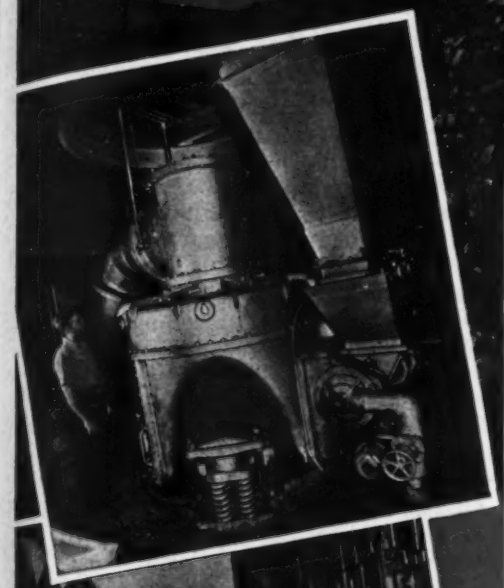
innovations in the new plant. The story of the company is one of continuous progress and improvements. The large manufacturing plant of this organization ranks among the important mills of its kind in the Southwest, with a weekly production of more than a thousand tons.

In 1898, upon the death of his father, Mr. Fleming was made president of the company. In 1922, when his brother passed away, he took over also the job of training the third and fourth generations of Flemings in the high standards that have become a Fleming tradition.

Surviving are the widow, a daughter, and two sons.

"MOTOR-DRIVE IS MORE THAN POWER"

RELIANCE V★S DRIVE



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OPERATING FROM A-c. CIRCUITS!

CONSTANT MAINTENANCE of a desired steam pressure from boilers is important in power company operation. To you, who may not need to worry about this problem, the fact that it is being handled automatically with the help of Reliance V★S Drive should nevertheless be interesting. It is a good indication of the wide variety of uses to which V★S Drive may be put.

"Reliance V★S" is an all-electric, adjustable-speed drive for A-c. circuits that provides for starting, stopping, speed-changing, smooth acceleration and deceleration, jogging, inching and other operations. All are centrally controlled from a conveniently located panel. Production machinery output is being increased, quality and uniformity of products improved, operator fatigue decreased and operation and maintenance costs lowered by many V★S Drive applications in many industries.

If you haven't investigated Reliance V★S Drive in relation to your own work, we suggest that you call in a Reliance Application Engineer.

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Each of the 14-ton-per-hour mills (upper photo) serves one 500,000 pound-per-hour boiler. Amount of coal fed into each mill, and thence to its boiler, is regulated by a Reliance V★S Drive unit, three of which are shown in above illustrations.

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Riqid *TESTS* at every vital step in production quard the dependable

QUALITY OF LUNKENHEIMER VALVES

TEST PRESSURES FAR EXCEED RATED PRESSURES

Every Lunkenheimer valve is given a thorough test at pressures far above its rated working pressure. Valves are tested on both sides at high and low pressure for seat tightness, and then given a shell test. The slightest leak causes rejection.

Nothing is left to chance in producing Lunkenheimer Valves. Exacting tests with the most advanced modern equipment are made at each important point in manufacture. Even final packaging for shipment must meet rigid specifications.

This may be producing valves the "hard way" . . . but for Lunkenheimer it's the *right* way, since it safeguards a reputation for quality that is our proudest possession. Today, with greatly stepped up production schedules, maintenance men appreciate more than ever the rugged durability, efficiency, and longer service life of Lunkenheimer Valves—the less attention and fewer repairs they require.

Lunkenheimer Distributors are located in all important industrial centers. There is one near you, ready at all times to assist in solving your problems of maintenance and operation.

Fig. 2125
125 lb. S. P. Bronze Gate
Double Disc, Rising Stem

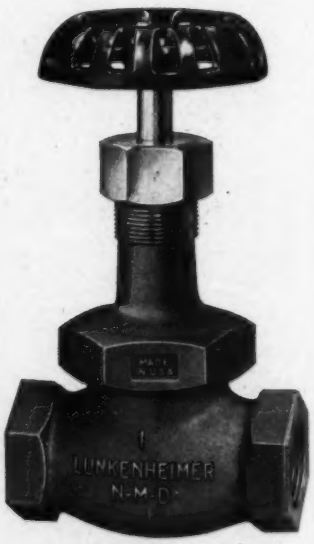

Fig. 123
"N-M-D" Globe (Non-Metallic Disc)

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
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NEW YORK 13 CHICAGO 6
BOSTON 10 PHILADELPHIA 7
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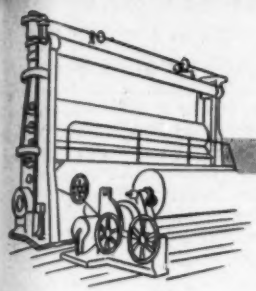
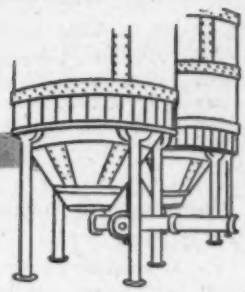


Practical SHORTS



Readers are invited to submit short, practical articles for this department. The items should be original and should relate to ways and means of handling production and maintenance jobs. Where possible, articles should be illustrated. Rough sketches only are required. Payment will be made for acceptable items upon publication.

Steam-Heated Calender Roll Troubles

Two steam-heated calender rolls often are provided in calender stacks on machines making papers with a high finish. Such rolls give their share of trouble.

A specification, for example, may call for a high machine finish with a high moisture content. While running such a sheet, slack places may develop in it while passing through the calenders. This trouble is known as calender blowing.

Then again, a steam-heated roll may be stopped up or the drip-line may be closed. In a case of this kind, the temperature of the roll will be higher at one end than the other. This condition will cause the sheet to bag which in turn results in calender cuts.

Sagging of the sheet and calender cutting also may be caused by an inaccurately drilled calender roll, a roll not uniform in density, or by a poor steam piping hookup.

Often two rolls may have steam delivered to them from the same side of the stack. This arrangement of piping is wrong. If one roll receives steam from the front side, the other roll should receive steam from the back side.

Gauge glasses, similar to those used on dryers, should be provided for the steam-heated rolls. The glasses make it possible to observe whether the condensate is leaving the rolls.

A pyrometer would show whether the temperature is higher in one part of a roll than another. If the temperature across the face of a roll is found to be uniform, then it is possible that the roll may be of unequal caliper or density, or the steam chamber may not be in the center of the roll. Any one of these conditions or a combination of them will cause trouble around a stack of calenders.

If a roll is of unequal caliper or density, there will be uneven expansion with consequent unequal pressure on the paper.

There is no other place on a paper machine except the calenders where the paper is subjected to line pressure without something over which to draw it before entering the next set of rolls. Where specifications do not call for too high a machine finish, it is possible to draw the paper from one nip to the other without wrinkling or cutting. Naturally, the greater the pressure the sheet is subjected to in the calenders, and the more rolls it passes between, the longer it becomes. This increase in length normally is taken care of by roll slippage, lower rolls traveling at greater peripheral speeds than those above them. However, if the pressure and heat required to give the desired finish and moisture retention extends the length of the sheet beyond what slippage will handle, the sheet will bag and cut in the calenders. The bagging and cutting will begin where the pressure is greatest.

If a heavy sheet shows signs of bagging in the calenders, the condition can be corrected by putting the sheet between the dryers and calenders under greater tension. This increase in tension increases the slippage and straightens out the bagging. The same practice can be followed to a certain extent with a light sheet. However, if the tension becomes too great, the sheet will snap off between the dryers and the stack.

When bagging of the sheet occurs at the stack, it is, of course, necessary to determine the cause. If paper with the same furnish, moisture content, etc., had been run previously with the same rolls and without any change in equipment, it would be safe to eliminate nonuniformity of roll density and improper positioning of the steam chamber within each roll as trouble factors. It might then be well to check the drips on the condensate discharges. If they are working satisfactorily, determine if the sheet is drying evenly across the machine. If that is found to be the case, observe whether the last dryer is sweating evenly. In the end, it might be necessary to caliper the calender rolls. They may need grinding.

Calender rolls will handle paper with a moisture content as high as nine per cent if the rolls are in shape. However, if any of the rolls are of uneven caliper, the paper is going to lengthen most in the area where it is pinched the hardest. Therefore, it is in this area where bagging first will be observed.—ARCHIE MCCAFFERY.

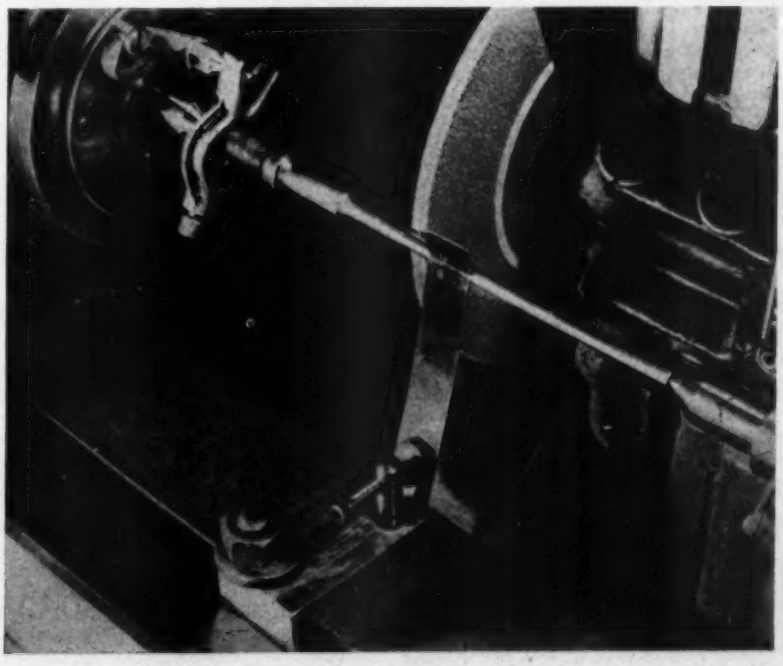
♦

Spring Rest Steadies Small Rods While Grinding Them

The accompanying illustration shows a spring steady rest devised by H. Rennie of the Punching, Tool and Die Division at General Electric's Schenectady works, for use in steadying small diameter rods while grinding them to extremely close tolerances.

The upright spring, attached to the end of the base by means of a bridge clamp, rests against the center of the rod under pressure, thereby giving support to the work. The bridge clamp is used to avoid weakening of the spring with screw holes which would otherwise be necessary.

The screw used to adjust the pressure of the spring has a spherical end composed of



Spring rest steadies small rods while grinding them.

a steel disk and a leather pad. The leather pad gives a cushioning effect between the two metal parts and tends to absorb vibration through the spring.—GENERAL ELECTRIC COMPANY.

◆

Washing and Turning Wet Felts

1. When wet felts on paper machines are to be washed and turned, only men of experience, thoroughly familiar with the work, shall be allowed to do it.

2. Reduce the speed of the machine to the lowest possible rate consistent with effective washing of the felt.

3. Make sure that adjoining felts have been shut down and are not moving.

4. If the felt is to be turned from the running-board, make sure the running-

board is not slippery. If it is to be turned from the floor, make sure the floor is free from slime.

5. Use enough soap or cleaning agent to make the felt very slippery.

6. One man should stand at the controls and keep his attention constantly on the men turning the felt. He should not leave the controls until the felt has been turned and all the men are out of danger.

7. The felt should be very loose.

8. Turn the felt at a point as far away from the nearest in-going roll as possible, and always turn it on the out-going side of the nip.—*Safety Instruction Card No. 508*, NATIONAL SAFETY COUNCIL.

◆

Use Steam to Best Advantage

In most industrial plants, biggest opportunities for steam saving lie in substitution of exhaust steam or any other low-grade heat for precious boiler steam. Every change in hookup or method of operation that allows exhaust to be used for live steam makes available an equal amount of boiler capacity.

Steam saving, like charity, begins at home. Look first to your power-plant hookup. Does live steam heat feedwater where bleed or exhaust steam could do the job as well? If exhaust from steam-driven auxiliaries is all or partly wasted, can you substitute motor drive? Where possible, recover heat in blowdown, condenser circulating water or other hot water flowing to waste; this will release steam for heating that water can't do.

In like manner, check process steam requirements. For each use, find by trial or analysis what constitutes minimum temperature and pressure. If your plant is average, some processes can be switched, with perhaps some little inconvenience, to low-pressure or exhaust steam, releasing high-pressure steam for more important work.

If you waste steam to atmosphere or hot water to the sewer, the chances are that one of the above suggestions or other similar schemes will produce steam savings. As long as there is a chance to make low-grade heat do the work now done by high-grade, ingenuity can make a steam saving.

Steam used unnecessarily in the boiler room or engine room is steam that never gets to do its production job. If prime-mover steam rates are higher than they should be, a direct waste of boiler capacity results. Take indicator cards on steam engines regularly and maintain proper valve settings to keep steam consumption to a minimum. Deposits on turbine blades increase steam rate and decrease capacity. Some deposits can be removed by shutting down and allowing units to cool, by dropping steam temperature, or by washing. Removal of insoluble deposits usually involves opening the unit and air-blasting with flyash or other material that will not harm blade metal. Best solution is to stop deposits at source; prevent carry-over by water treatment and proper boiler operation. Worn turbine blades also cut down efficiency — silver soldering offers a practical means of restoring blade shape. Keep condenser clean and tight to insure high vacuum necessary to efficient prime mover operation. One-tenth of an inch better vacuum means one-half per cent less steam used.

Many possibilities for steam saving lie unsuspected in small auxiliaries around the plant. Valves in poor condition, leaky packings and glands and irregular operation boost steam consumption of small pumps. Check condition and operation of soot blowers, steam-jet ejectors on ash- and dust-handling systems, auxiliary-drive turbines and engines.

If peak load is high in relation to average load, examine the time cycle and absolute necessity of every load that contributes to the peak. Many kinds of process equipment, digesters for example, operate intermittently and involve extremely heavy steam loads for starting. Arranging to stagger operation of such units can materially reduce peak loads; staggering can be effected by developing a schedule for operators, and seeing that it is enforced, or by automatic program control. Such scheduling requires co-operation among production departments; experience shows that it can be done without interfering materially with production.

After possibilities of scheduling have been explored, see if some loads can't be cut off or reduced during the peak period. Look for units such as dryers, hot-water heaters and kilns that can operate with reduced heat input for a short time without great harm to the product. Hot-water heating in particular, if carried out on a large scale, can be used as a thermal flywheel to even out swings in boiler load. Where necessary, heating and air-conditioning equipment can be shut down during the peak period. Normally, storage effect will avert any drastic change in comfort conditions if shutdown period is short.—*Rowley*, L. N., POWER (August, 1942).

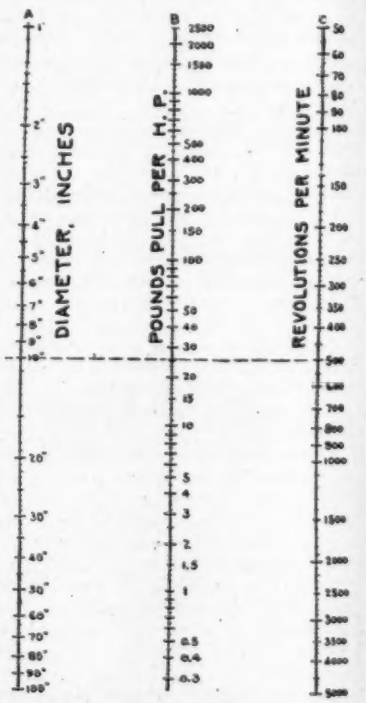
◆

What Is the Pull or Push per HP.?

Here is a handy chart for quickly solving a wire variety of drive problems, including flat belts, V-belts, chains, ropes, cables, gears, etc.

For example, you want a chain for a 10-inch sprocket running at 500 rpm to transmit one hp. How strong must the chain be?

The dotted line drawn across the chart shows how it is done. Connect the 10" (column A) with the 500 (column C) and column B gives the answer immedi-



ately as 25.2 pounds. If you want a chain that will transmit 10 hp. you merely multiply 25.2 by 10, which gives 252 pounds as the necessary strength.

If you are designing a belt drive, the chart can be used in the same way for determining the "effective pull"—which is the difference in tension between the tight and the slack sides.

For gear drives, the "push" is found in the same way. In other words, if the diameter of the pitch circle is 10" and the gear is to make 500 rpm, the tooth must have a "pushing strength" of 25.2 pounds for each horse power to be transmitted.—W. F. SCHAPHORST, M. E.

Simple Tool for Opening Cotter Pins

The accompanying illustration shows a simple tool for opening cotter pins.

The tool has a blade resembling the blade of a screw driver. In this blade, a cut-out is made of the proper size to span the shaft which carries the cotter pin. One prong formed by this cut-out is made round to fit into the eye of the cotter pin. The other prong is flat and has a knife edge over its end.

In operation, the round prong is inserted into the eye of the cotter pin and

the flat prong is forced between the two legs of the pin thus forcing them apart. A simple twist of the wrist opens the cotter pin to any degree desired.

Care must be taken in making this tool to properly harden and draw the blade.

It can be made from either high carbon (1 to 1.1) water hardening tool steel, or SAE 5150 tool steel without vanadium (Brinell hardness 259 to 300). Hardening treatment of these steels should conform to practice suggested by the supplier.—Westinghouse Electric & Mfg. Co.

◆

Ash Troubles

When burning a low-fusing ash coal, too much time between cleaning causes clinkers to stick tightly to grates and furnace walls. Then when the fires are cleaned, large lumps of coal fall into the ashpit. Don't pull clinkers off underfeed stoker grates before lifting the dump plates. Keep fires away from sidewalls when possible.

Sometimes a home-made water cooling system is used along the clinker line effectively. One system is a series of jets projecting through the furnace walls at 6-in. to 12-in. spacing. From these, small streams of water trickle into the ashpit.

Exhaust steam blown into the ashpit is effective in preventing clinkers sticking to grates and dump plates in overfeed as well as underfeed stokers. Clinkering is a major cause of high ashpit loss. Loose, broken or warped grate bars are another cause.

Other important causes of high ashpit losses on traveling grate stokers are segregation of coarse and fine coal, and coking characteristics of coal. Freer burning coals give lower ashpit losses. Often, adding water to coking coals improves both boiler capacity and efficiency by reducing ashpit and excess air losses.

Some years ago, the author spent much time experimenting with a low-volatile coking coal on traveling grate stokers in New England. He found that by adding from 6 to 8% free moisture to this coal (⅜ x 0" slack) ashpit losses were cut in half with a marked increase in over-all efficiency.

With spreader stokers, there may be a lot of carbon in the flyash. This carbon loss is apt to be higher in a lower ash strong-coking coal than in a higher ash free-burning coal. Steam jets properly placed in the furnace have been known to reduce materially the carbon in the flyash.

Carbon loss in the flyash from pulverized-coal-burning plants is largely a function of the fineness of the pulverization. Grind coal as fine as possible. Keep pulverizer in good repair, and avoid secondary combustion in tube banks. If possible, keep the flame in the furnace.—R. F. Stilwell.

◆

How Time Is Wasted

If you will study conditions in your own department, you will be able to list a great many ways in which time is wasted. Time is frequently wasted in the following fifteen ways:

1. Lack of planning
2. Misunderstanding of orders
3. Keeping workers waiting
4. Lack of knowledge of the day's work
5. Improper instruction
6. Not having tools and supplies in the proper place
7. Working unnecessary overtime
8. Not getting men when needed
9. Absenteeism
10. Delay in making decisions
11. Not making repairs when needed
12. Lack of proper organization
13. Indifference of workers
14. Improper assignment of workers
15. Tools and equipment not in proper condition or adjustment

Use the foregoing causes of waste time as a check list. Check each job against each of these causes of waste time, and against other causes which you might add to the list. Do this systematically for every job and you will soon spot the points at which wasted time can be most effectively reduced. —*Management Information,* Elliott Service Co.

◆

Belts Run Crooked?

There may be several reasons for this.

1—Tight belts may easily be injured by forcing them on the pulleys in such a manner that one side of the belt is stretched more than the other. Great care should be taken to prevent injury, and, except on idler drives, all belts over 8 in. wide used on pulleys with fixed centers should be put on with clamps.

2—If belts are allowed to get slack on either flanged or step-cone pulleys, they are likely to run up on the flange or pulley and stretch one edge excessively, making the belt crooked. Keep belts tight.

3—If either pulleys or shafting are much out of line, the belt may become crooked, especially if allowed to run in this manner for long.

Check to see if there is a curve in the belt or if the pulleys are out of line; then reverse the direction to see if the belt runs to the same side of the pulley. If it runs to the opposite side, the belt is probably crooked, and neither the shafting nor pulleys are at fault. If you can't reverse the direction of rotation, turn the belt inside out. If the belt runs to the same side, the belt is not at fault.—Samuel L. Allen.

◆

How to Install Leather Belts Correctly

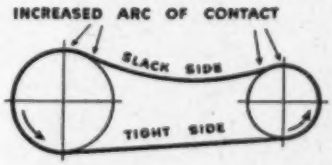
Time spent in checking alignment, tension and other recommended details in the installation of a belt is not wasted, as the cost is repaid in better belt performance.

For best results, a leather belt should be run with the least tension needed to transmit the load without slipping.

If a belt is run too slack, it will slip, causing its surface to glaze, then crack and peel.

If it is too tight, it may place excessive loads on bearings.

Wherever possible, flat leather belts should be run with slack side on top. This



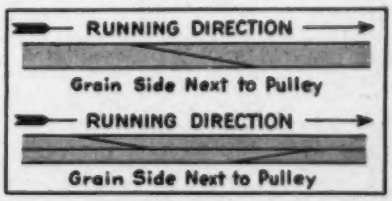
will provide a greater arc of contact between belt and faces of the pulleys. On short-center or vertical drives, use a pivoted motor base.

Use care in forcing an endless belt over the pulleys so as not to put a crook in it. Belts, particularly those six inches and wider, should either be made endless on the job by means of clamps and rods or slipped on after temporarily shortening the center distance between pulleys by means of motor slide rails or loosening hanger bolts, etc.

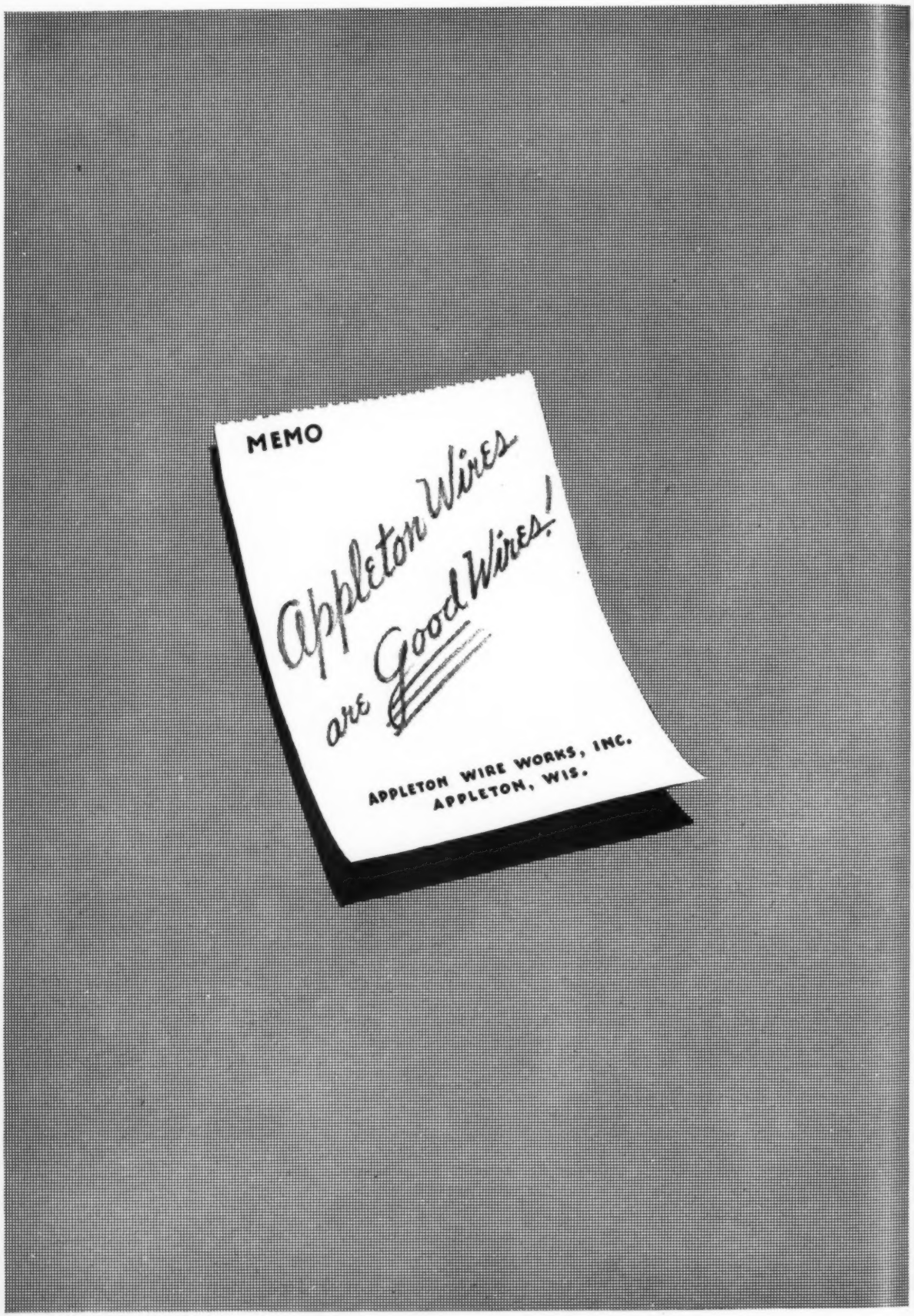
If quarter-turn drives are put on with clamps and rods, better machine production, fewer shutdowns and longer belt life will result.

To get the greatest pulling power from leather belts, the grain or hair side of the belt should run next to the pulley faces.

On flanged or step-cone pulleys, it is good practice to use belts that are at least ⅜" to ½" narrower than the pulley face.



Care should be exercised to have the outside feather edge of the lap faced *away* from the direction in which the belt runs. This tends to protect the outside points of the lap if struck by guards, guides or shifters or from being opened up due to windage.—American Leather Belting Association.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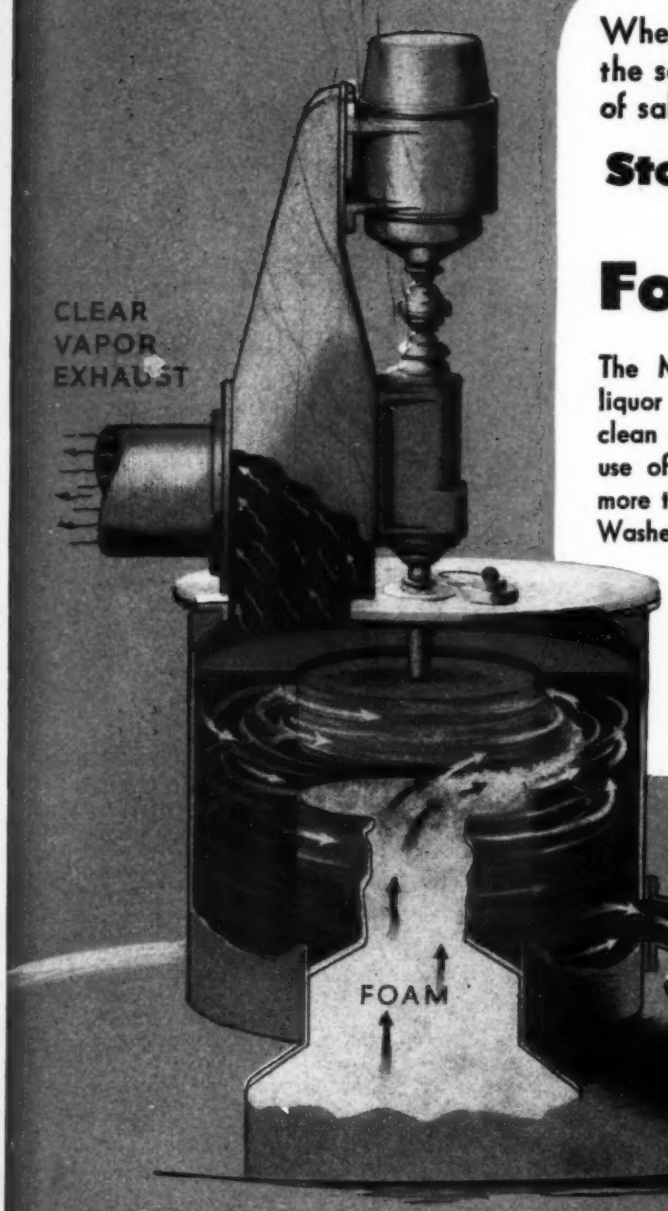

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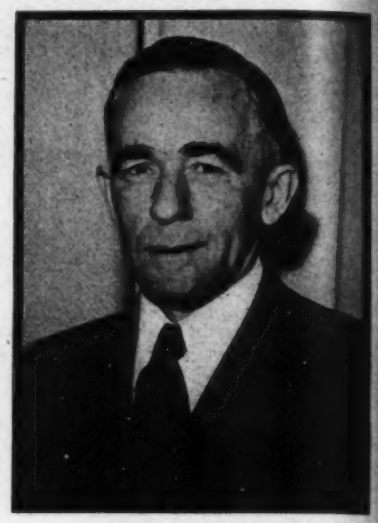
The Outlook for the Paper Industry in 1945*

E. W. TINKER, Executive Secretary
American Paper and Pulp Association

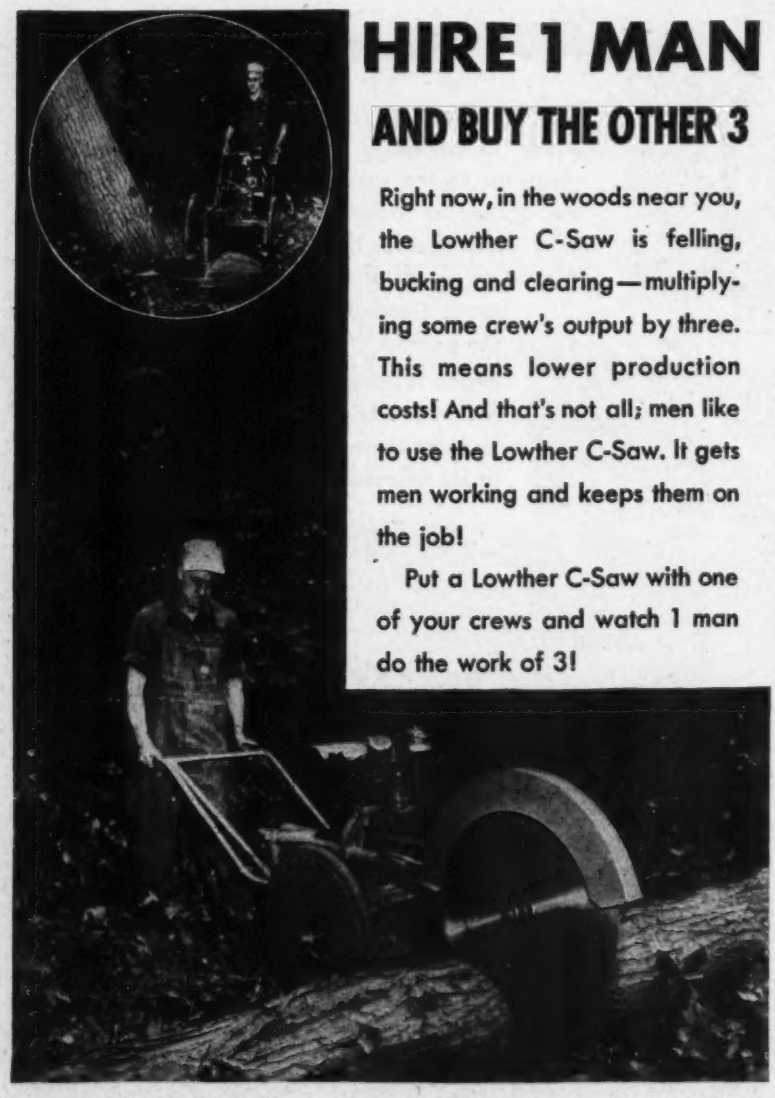


▶▶▶ BEFORE ATTEMPTING to analyze the outlook for 1945, I would like to review a little history.

Since the initiation of the National Defense Program in 1940, the pulp and paper industry has, of necessity, had to meet problems that might have had disastrous effect not only upon individual companies but on the entire war program itself. These problems have been so numerous and the implications so far-reaching that actions of various kinds have been necessary and particularly actions that would bring results. To illustrate, I would like to cite four major decisions that have drastically affected the industry since the initiation of the National Defense Program and in everyone of these decisions I submit that the industry has done its part to chart a course, not only in the interests of the welfare of the industry but of the national wartime economy. Because of general misconceptions, particularly within military circles, as to the essentiality of the pulp and paper industry, our course has not been an easy one. In the main, these misconceptions have been corrected but even yet there is room for much improvement, particularly in the War Manpower Commission's attitude toward the essentiality of paper and paper products under the existing circumstances. Even heroic efforts on the part of the War Production Board itself have not been able to rectify the situation in its entirety.

The four major decisions to which I wish to refer cover, first, the policy laid down with the initial establishment of ceiling prices for wood pulp. The spiraling prices brought on by the elimination of Scandinavian wood pulp imports necessitated action by Mr. Henderson's office and, in my judgment, the co-operative approach that was used at the time was due in no small degree to the ability and understanding of T. B. McCabe, of the Scott Paper Company. The across-the-table discussions of the then existing situation with major producers were based upon two major considerations. First, the representatives of Mr. Henderson's office conceded that maximum production must be maintained and no price established that would not permit full operation of marginal capacity. Secondly, company by company, Mr. Henderson's representatives inquired if the then existing price would accomplish this objective and upon receiving an affirmative answer, each company was asked if it would refrain from further price increases without consultation with Mr. Henderson's office. That meeting, and the decisions reached, while they have been modified in many respects since that

(*) Mr. Tinker delivered this address at the tenth annual joint meeting of the Michigan Division of The American Pulp and Paper Mill Superintendents Association and the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry, January 11, 1945, at Kalamazoo, Michigan.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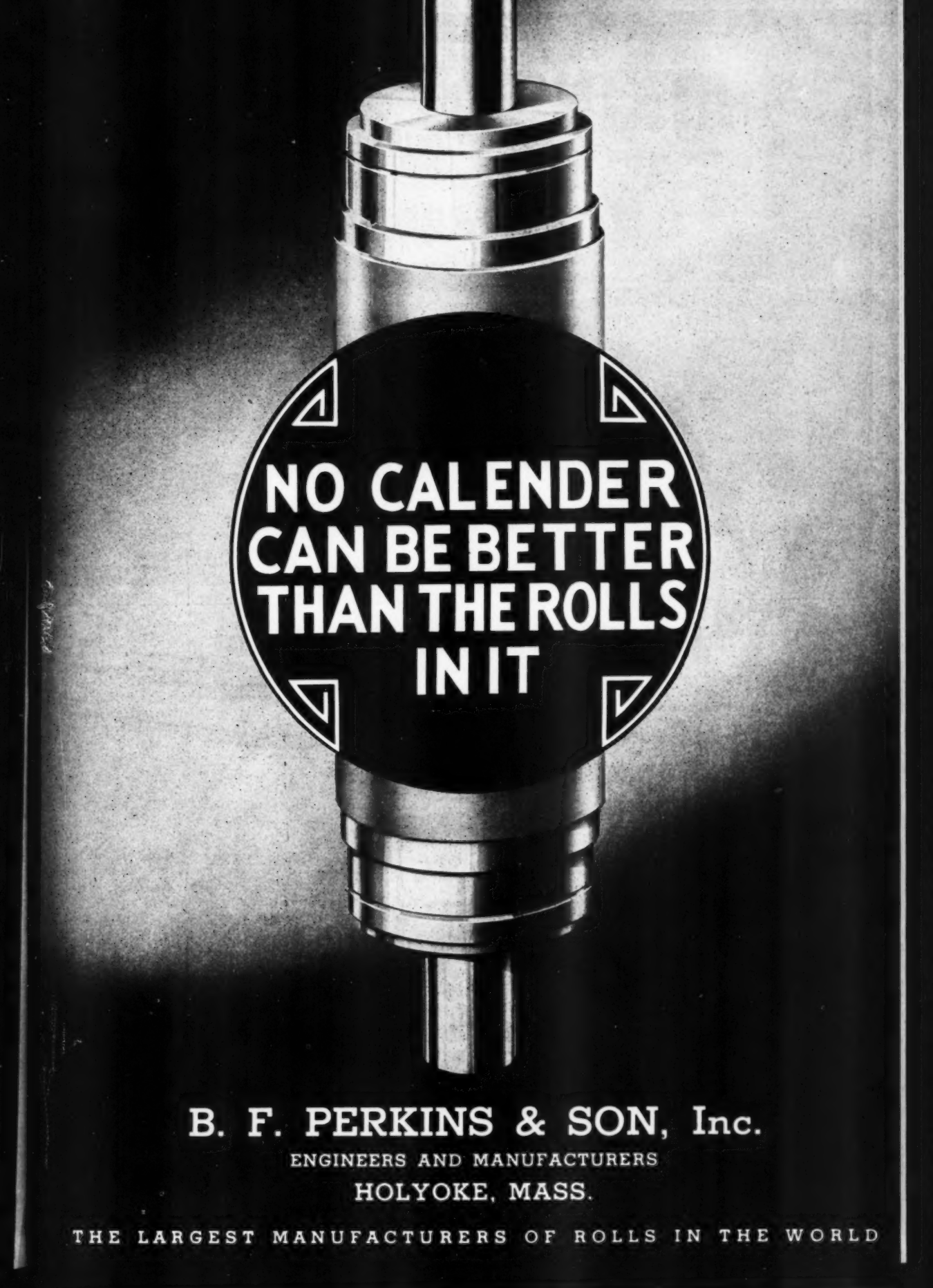

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time, set a pattern that I believe reflected credit on the industry and certainly on the men representing the Government in the discussions.

The second major difficulty that had to be surmounted was the apparent total lack of recognition of the fundamental problem of maintenance of adequate inventories of wood if pulp requirements were to be met. Since the fundamental difficulty in maintaining the wood supply rested with the shortage of manpower and equipment, and since at the outset there was little inclination to recognize paper and paper products as essential, this difficulty seemed at times almost insurmountable. Several steps were taken. The cooperation of the publishers was asked in the initiation of a national campaign to encourage pulpwood production. This campaign is still effective and certainly still vitally needed. It is now receiving support from many sources. Second, after great difficulty, pulpwood cutters were given an essential rating which had a marked effect upon the output of farm-labor produced wood. Third, the industry brought strong arguments into the foreground in order to have established in the Pulp and Paper Branch of the War Production Board a Pulpwood Division, headed by a qualified executive. The final establishment of this division and the centralizing of responsibility in it for the maintenance of adequate wood supplies, in my opinion, contributed as much as any action taken to the maintenance and improvement of pulpwood, pulp and paper production. The industry owes a debt of gratitude to the men who assumed the responsibility for this undertaking and to the effective work that they have accomplished. Fourth, it took consistent pressure and strong arguments to inject the production of pulpwood as a part of the program of the Timber Production War Project, which was and is supported by an appropriation of one million dollars of federal funds. While the effectiveness of this project is not subject to close measurement, there is no doubt that it has played a considerable part in the maintenance of wood production over the past year and a half.

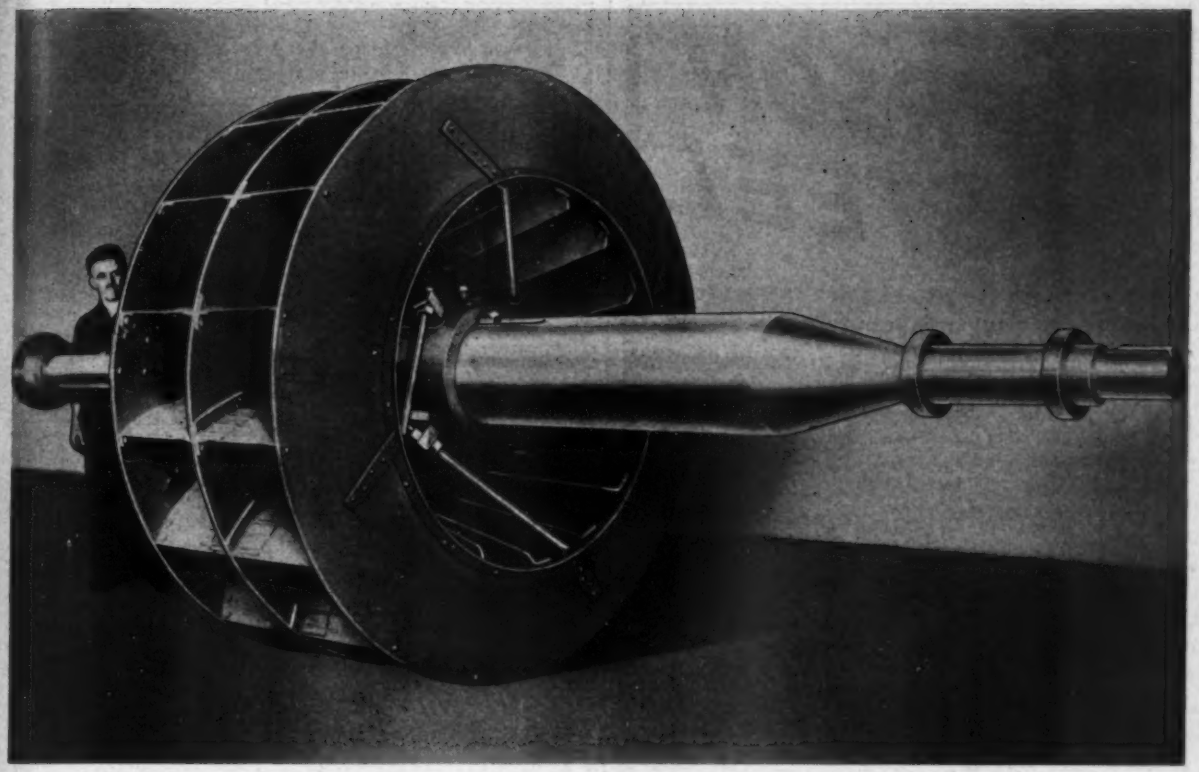
The third startling proposal that might have assumed the proportions of a catastrophe for many companies and mills involved the plan for concentrating production in a limited number of operations. I have no doubt that you have very vivid recollections of this suggestion, which is in sharp contrast to the plan that was actually adopted, which involved the present pulp allocation program.

The fourth problem that has been solved, in part at least, involved the lack of recognition in the War Production Board itself of the essentiality of paper and board to the war economy. The attaining of a justifiable status and recognition was a major achievement since it brought about the reorganization of the War Production Board administrative setup and the establishment of the present reasonably effective, general organizational plan.

I presume it will appear that the pulp and paper industry has muddled through the war emergency period, at least up to this time, but the fact of the matter is that specific and planned action has been taken to meet emergencies as they have arisen. I am certain that if effective presentation of the facts had not been made, the industry would be in a far different position than it is today and that the war economy would have suffered very materially.

You will appreciate, I am sure, that I have not mentioned many actions that were taken, such as reduction of basis weights, proposals for curtailment of production because of alleged excessive use of power, and the problem of use of critical materials.

With respect to 1945, no one can make prognostications that are not subject to many contingencies. The duration of the war itself is a major one. The requirements of the Foreign Economic Administration, in the immediate postwar period, will have a serious impact. Increase in the acute manpower shortage can disrupt the industry's entire schedule. It is perfectly obvious that the tightening economy of the industry due to cost increases is reaching a point where production will, in due course, begin to be affected. Once production starts to decline, because of economic conditions or any other conditions, the effect will grow in geometric proportions. One circumstance, and one alone, has permitted the pulp and paper



Do "Buffalo" Induced Draft Rotors Wear Well?

Here is the Waukegan record

The main difficulty experienced with modern pulverized fuels has been wearing-out of induced draft fan rotors, due to erosion and corrosion. Many of these fans have required blade or rotor replacement every six to twelve months. Read below the performance record of Buffalo Induced Draft at Waukegan.

Three Buffalo induced and three forced draft fans, called Unit No. 3, were bought by Waukegan generating company back in February, 1924. This unit has required 1 set of blades in 1938; 1½ sets of blades in 1944.

Unit No. 4, bought in January, 1929, had one set of new blades in 1938.

Unit No. 5, bought in November, 1929, has had no replacements to date.

It is not by accident that Buffalo Induced Draft Fans stand-up under difficult conditions. The engineering "know-how" puts metal where it's needed, shapes blades to provide most efficient operation. Why not insist on this advanced engineering in your fans?

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industry to maintain its production schedules over the past year and that is the high operating ratios that have been maintained. If this had not been the case, under the existing price levels established by the Office of Prcie Administration, the economic position of the industry would have been impossible and production would have been affected very materially. The steady increases in costs for both material and labor could only have been absorbed under maximum production schedules.

Very recently in discussing the production problem of the industry with Mr. Bowles of the Office of Price Administration, industry representatives pointed out the fact that the situation in which the industry now found itself was critical indeed. It was urged that the Office of Price Administration give the closest of attention to current trends in order that prompt action might be taken in order to maintain essential production. If this essential production is not maintained, because of uneconomic situations within the industry, it appeared to the industry representatives that a large part of the responsibility for any failure would rest upon the Office of Price Administration.

The following data will indicate the trend in cost-price relationship which must be recognized. The following increases from 1941 have occurred in the cost picture of the industry:

Average hourly earnings....21.8 per cent
Weekly earnings .....43.3 per cent

The labor cost per ton has increased an average of 35.5 per cent. Material costs, in the same period, have increased as follows:

Wood pulp prices.....13.1 per cent
Waste paper prices.....28 per cent
Pulpwood prices .....67 per cent
Fibrous raw materials.....13.8 per cent

These data, in face of the fact that paper prices have in the same period increased only 4 per cent, would indicate that if the trend continues production will inevitably be seriously affected, unless OPA is alert to the situation. One cannot view the outlook for 1945 with too much optimism unless these economic trends within the industry are recognized.

Related to this whole picture is the existing problems of maintenance of material requirements for the industry. Only

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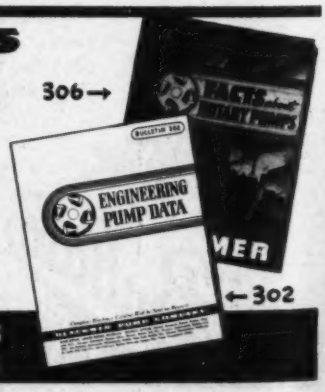
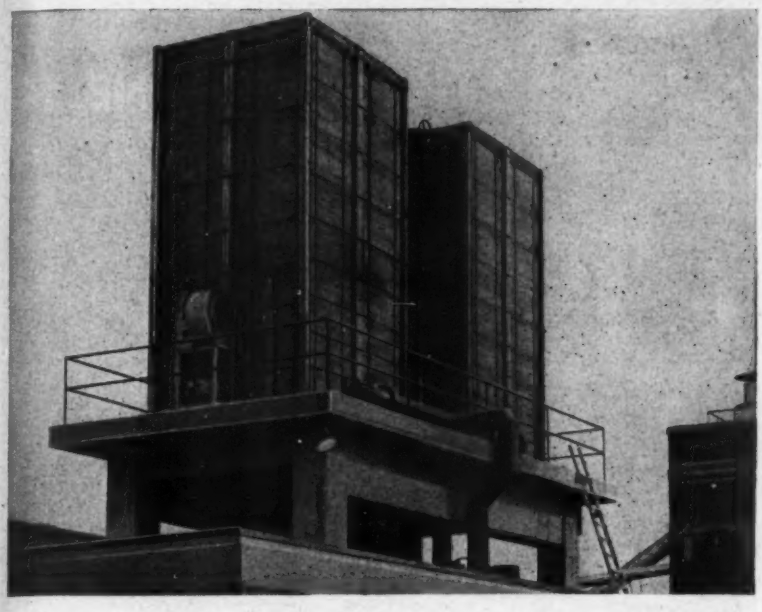
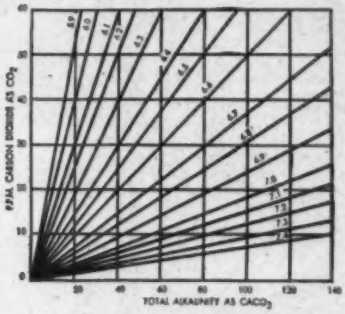


DEPENDABLE PUMPS FOR PROCESSING INDUSTRIES
POWER PUMPS - HAND PUMPS - EZY-KLEEN STRAINERS

REMOVAL OF CARBON DIOXIDE

from PROCESS WATER





Relationship between the pH value, carbon dioxide and alkalinity

THE DEGASIFICATION OF WATER BY COCHRANE EQUIPMENT

The problem of removing dissolved gases from process water may be quite complex, as coordinating a design and determining a guaranteed performance involves knowledge and experience of a highly specialized nature. Cochrane has issued a bulletin on the subject that outlines briefly some of these problems and their solution. Write for a copy.

CARBON DIOXIDE can be removed from cold process water most economically by means of a Cochrane Decarbonator.

The photograph at the top of this page shows a twin decarbonator installation. As indicated, the construction is of wood throughout, with the exception of the spray pipes which may be of copper or stainless steel or of wood with porcelain or stainless steel ferrules. The nails are of copper or stainless steel. The water is sprayed over a bank of wooden trays, the depth of which depends on the amount of carbon dioxide to be handled and the residual carbon dioxide desired. Air from a blower is forced in at the bottom of the decarbonator, counter current to the flow of water and is vented from the top, scrubbing the water on its way and carrying the carbon dioxide with it.

This type of unit is well adapted to the removal of carbon dioxide from waters highly charged with gas resulting from treating process. It is also most economical in the treatment of well waters that may be high in carbon dioxide with low alkalinities, resulting in a very aggressive water. Removal of the carbon dioxide raises the pH value.

COCHRANE CORPORATION **3114 N. 17th ST., PHILADELPHIA 32, PA.**

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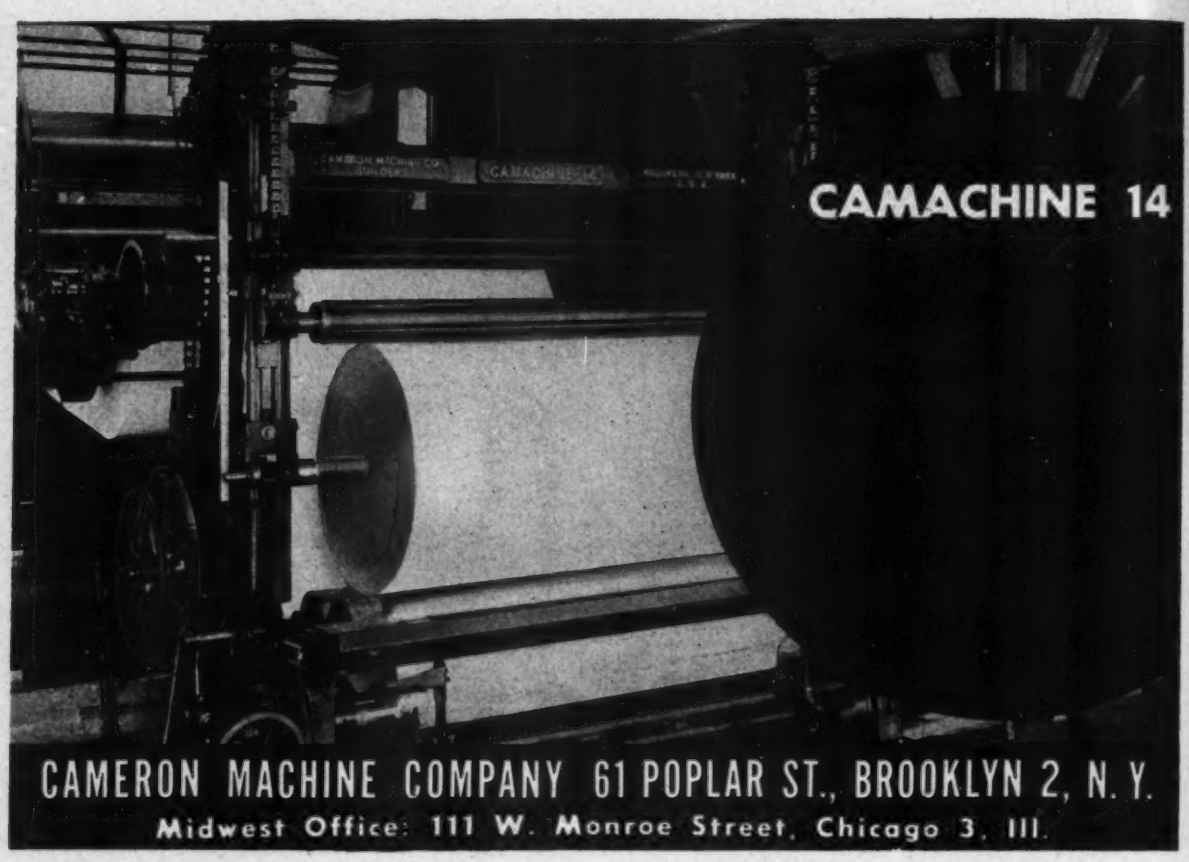

by the use of every skill and every device has the pulpwood supply been maintained. At the present moment, in the South, the situation is indeed acute and production is already being affected. Available manpower on the basis of the present outlook will not be augmented, to say the least; in fact the probabilities are that it will decline. If this means a decline in the operating time of the industry, then it would appear probable that paper shortages, such as have not been conceived of in the past will occur.

The future of the pulp and paper industry on the basis of the demand outlook is good. The industry has the technical skills and the leadership. Its problem of loss of incentive for capital investment is not unique to this industry but covers other industries as well. This is a problem for labor and management alike and I think they should look to the day when it is so considered. Out of such meetings as this grow understanding and, with understanding, grows a co-operative viewpoint. Certainly it is apparent that no unit in the industry can stand alone. The year 1945 will indeed be a difficult one, but the immediate postwar years, on the basis of known conditions, can offer full and continuous employment, providing moves that, by artificial means, would upset historical conditions within the industry, are not made. It is our job, conjunctively, to do everything within our power to prevent such moves and I know the industry can look to you for full co-operation.

Thirty-second Annual Report Canadian Pulp and Paper Association

E. HOWARD SMITH
Chairman of the Executive Board

▶▶▶ FOR MANY YEARS it has been customary for the president of the Association to present this annual report on behalf of the Executive Board but since we have no president the privilege of submitting this report has been accorded to me.

During the past year, by authority of a resolution passed at last year's annual meeting of the Association, the functions of the president have been carried on by an "Interim Management Committee." This committee comprised C. R. Whitehead, F. C. Robinson, and myself.

The members of your Executive Board have given generously of their time and abilities. The meetings of the board have been well attended, and between meetings individual members have devoted much time and thought to the solving of the many problems in which your association was involved. I am sure you will all agree with me that the Association owes them a real debt of gratitude.

It is with deep regret that I record the death shortly after the annual meeting last year of I. H. Copeland. His passing was a distinct loss to the industry and particularly to your Executive Board, of which he had been a member for several years.

No other changes were made in the membership of the Executive Board during the year, but I am glad to report that R. L. Weldon was able to play a more active part in our affairs. His counsel and help have been most welcome.

As of December 31st, membership in the association stood at 73, including three new members who joined during the year.

The Western Branch was active throughout the year. Among other things it assisted in the preparation of a series of excellent briefs on the pulp and paper industry of British Columbia for submission to the Sloan Commission.

During 1944 Executive Board meetings were attended by J. A. Young, chairman of the Western Branch and by H. J. McKenzie, assistant secretary in charge of that Branch. J. A. Young has been re-elected chairman for the ensuing year.

It is very gratifying that several Western members have again attended our annual meetings this year. We are very glad to see them and we hope that even more of them will be with us next year.

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The audited financial statements of the Association were submitted at the annual meeting this morning, therefore I will not attempt to cover them in detail, but I know you will all be glad to hear that our revenues last year exceeded the original estimates by a comfortable amount. As a result, the Association has been able to take care of all current expenses, including expenses incidental to the establishment of its new offices and still show a surplus on the year's operation. Our reserve now amounts to approximately $110,000, of which $83,000 is invested in Dominion Government Bonds. It would be wise to hold this intact, if possible, against unforeseen shrinkage in revenue during the uncertain years ahead of us.

The tentative budget for the ensuing year amounts to approximately $170,000. This includes the usual grant of $53,750 to the Pulp and Paper Research Institute of Canada and almost $35,000 for the activities of the Technical and Woodlands Sections; an increase of about $7,000 over the amounts included in last year's budget for these two sections, whose work has expanded along lines of practical value recognized and approved by the industry. This budget does not include the additional expenditures incidental to the appointment of a full-time president. These will be met by a general proportionate increase in assessments on all members.

Activity of your association continued at a high level during the past year, about 128 formal meetings of the various committees and sections having been held in addition to many informal meetings between members.

As you all know, the old offices of the association were overcrowded and their location on University Street was inconvenient for the membership. To overcome these difficulties, also to provide office space for the president when he is appointed, your Executive Board decided to move the general offices to the Sun Life Building. The move was made last May and has worked out very well.

The committee consisting of C. R. Whitehead, F. G. Robinson, and myself, which was entrusted with the task of selecting a full-time president, has been active in a considered and conscientious way on this important matter. It is expected that under the authority granted at the last annual meeting the Executive Board will make an announcement in due course.

One of the most important matters dealt with by your Executive Board last year was the formation, in collaboration with Newsprint Association of Canada, of the new Joint Executive Board of Newsprint Association and of your Association. This is really a natural development from the old joint board. It has a larger and more representative membership and becomes the sole voice of the industry on "general industry matters."

Charles Vining, president of Newsprint Association of Canada was elected chairman and I was elected vice chairman. W. H. O'Reilly was appointed acting secretary.

While the Joint Executive Board has only been in existence for a few months, it has already been found most useful and I am confident that as time goes on it will render invaluable service not only to your Association but to the entire pulp and paper industry.

The information committee which conducts the industry's public relations activities, the industry Pulpwood Committee, the Post-War Reconstruction Committee, the Controller's Committee and the Woods Labor Task Committee have all been active. The members of these committees have given generously of their time and their talents and I take this opportunity of extending to them the thanks of the Association. These committees now report direct to the Joint Executive Board and since their activities are reported at the board's open quarterly meetings, I will not attempt to deal with them here.

The Pulp and Paper Research Institute of Canada, which as you know is a co-operative endeavor of the Dominion Government, McGill University and your Association, controlled by the Joint Administrative Committee, has continued to function well under its general director, Dr. Otto Maass. Valuable collaboration has been developed with Dr. Clifford B. Purves, who succeeded last year to the

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Paper and Pulp Section

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E. B. Eddy chair of Industrial and Cellulose Chemistry at McGill University.

Naturally, war work is still given preference, but a substantial amount of investigation and development work sought by the industry has been done and reported to the industry. The close relationship developed between the Institute and the Technical and Woodlands Sections has continued to produce results of real value to the industry.

During the past year, F. G. Robinson resigned as chairman of the Joint Administrative Committee and R. L. Weldon was elected to replace him. Mr. Robinson was untiring in his work on behalf of the industry and his achievements in this office richly deserve the sincere thanks of the industry, which I now tender to him.

The Technical Section again records a substantial increase in its membership, totaling 570 at the end of the year. This increase shows a realization of the value of the section and is encouraging to the members to continue their good work for the benefit of the industry.

The two branches of the section, Ottawa Valley and Niagara, have experienced a successful year and continue to serve as a focus for the technical men of the industry in these centres.

During the year, the section prepared and distributed an excellent brief on "The Relationship of Wood Moisture and Wood Species to Pulp and Paper Quality and Paper Machine Efficiency." This report prepared by the Groundwood Committee met with a good reception throughout the industry and many additional copies were called for by the member companies.

Co-operation between the Technical Section and the Research Institute has been well maintained during the year and most of the industry technical research which was carried on by the institute was on subjects which were recommended for attention by the Technical Section either formally or informally. A more complete account of these items will be found in the Annual Report of the Pulp and Paper Research Institute recently distributed to all members.

It is pointed out that the bulk of the work accomplished by the Technical Section is done by individual members working on the various committees. The section's contribution to the industry depends, therefore, very definitely on the co-operation of management in making it possible for these members to serve on such committees. It is hoped that this co-operation will continue to the mutual benefit of the individual members, the section and the industry.

Membership in the Woodlands Section showed an increase of 58 during the past year, making a total of 356 as at the end of the year.

The section has been active in providing consulting service to the membership and in the collection and dissemination of practical information on various aspects of woods operations. Activities have been somewhat curtailed owing to shortage of staff but it is hoped that satisfactory replacement for the two men who resigned will be found shortly.

Various committees have been active during the year—in particular the committees on Training of Cooks, Logging Mechanization, Forest Management and Forest Entomology and Pathology.

The Logging Mechanization Committee has submitted a report on this subject which was discussed by the industry this week and which it is hoped will be put into effect by the member companies concerned.

A good deal of time has been spent on instruction in logging efficiency, based upon the books published by the section, and Mr. Randolph's services in this connection have been in great demand. Arrangements have been made, commencing January 1, 1945, whereby the cost of Mr. Randolph's services will be charged to the companies making use of those services.

Further research work is being done in connection with the technique of river drives and it is expected that a text book on this subject will be issued during the coming year under the auspices of the Woodlands Section and the Research Institute.

Through its committee on Forest Management, the Section also prepared a brief on "Forest Policy" which was submitted to the Post-War Reconstruction Committee for its consideration in postwar planning.

The Forest Entomology and Pathology Committee has studied problems of the

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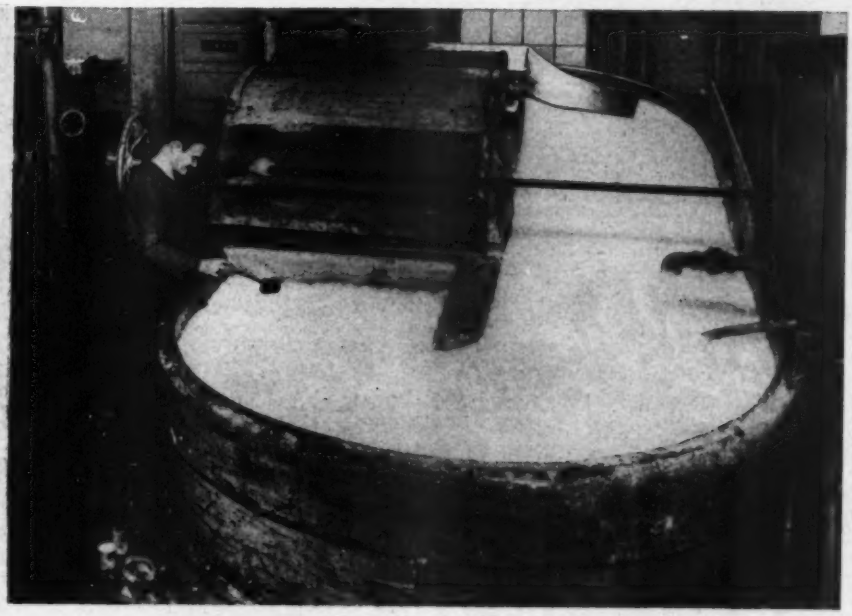

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spruce budworm and other insect infestations, has made recommendations to the Executive Board in this connection and has co-operated with other agencies in dealing with this question. If our forests are to continue to play their important part in the economic life of the Dominion, such problems as that now presented by the spruce budworm, must be solved before they become beyond control and thousands of square miles of forests are destroyed. This is a serious problem and one which cannot be solved by the industry—it demands positive action on the part of the Dominion and Provincial governments.

The Traffic Section has continued its good work on behalf of the industry during the past year and at its meetings has dealt with matters affecting transportation, freight rates and other items connected with the movement of raw materials and finished products of the industry.

The year has been a difficult one for transportation, and the section has co-operated closely with the Pulp and Paper Products Administration of the Wartime Prices and Trade Board and with the railroads with the result that no great hardships have been encountered by the industry.

The section has kept constantly before its members the necessity of doing everything possible to maintain the supply of railroad cars and in this connection supported fully the efforts of the Transport Controller. Similar co-operation has been given in the matter of maximum car-loading in which respect the section was able to assist materially in the framing of regulations. The maintenance of the car supply is of vital importance to our industry and everything possible must be done to avoid delay in loading or unloading. The large and constant movement of men and supplies for the armed forces and the seasonal heavy movement of grain impose a heavy burden on the railroads and shipping and the best efforts of all concerned are necessary if serious shortage and congestion are to be avoided.

The thanks of the industry are expressed to the Railroads which materially assisted the section in the difficult conditions which prevailed during the year. The co-operation and good will extended by the carriers is greatly appreciated by the members of the section and by the industry.

The activities of Wartime Machine Shop Board were somewhat curtailed last year due to fewer "bottlenecks" in Canada's war production program. Notwithstanding this curtailment, the machine shops of the industry turned out some $2,500,000 worth of war work bringing the total value of work done under this plan to approximately $9,500,000.

It is now evident that the essentiality of our shop program is diminishing. The board is watching this situation closely with a view to terminating its activities whenever the necessity of our shop capacity has ceased.

Wartime Service Department has continued steadily, realistically and promptly to deal with the myriad problems that

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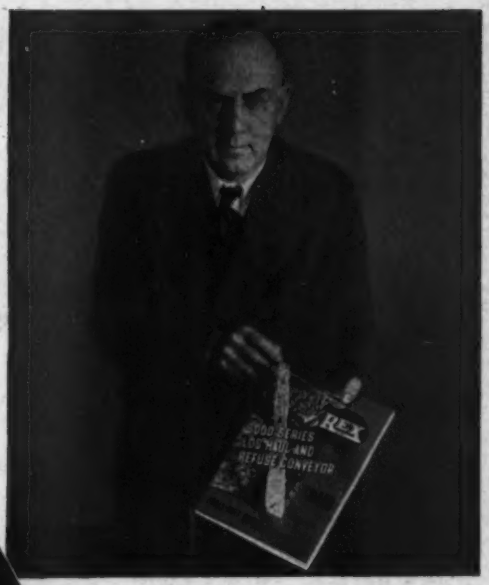
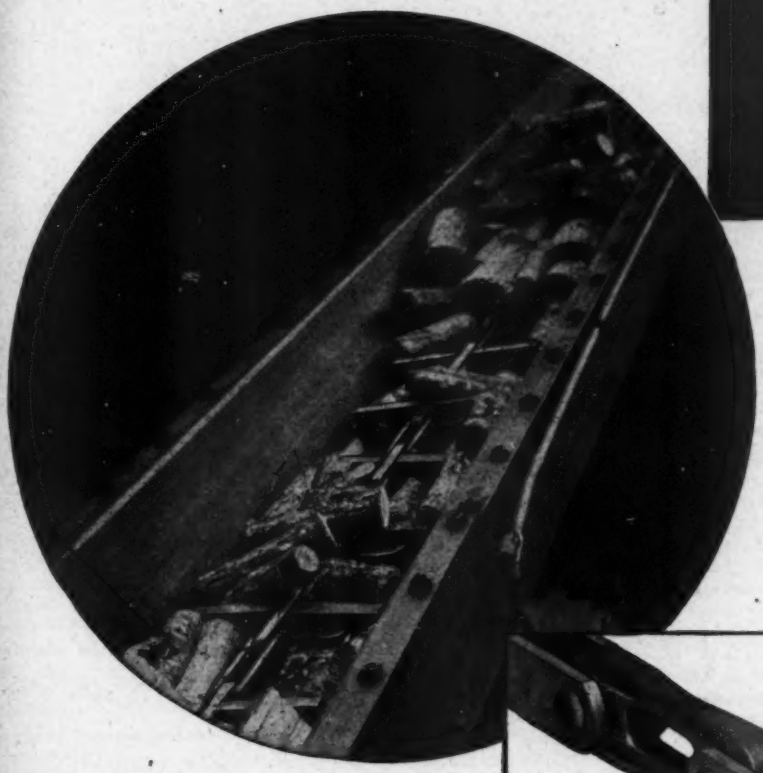
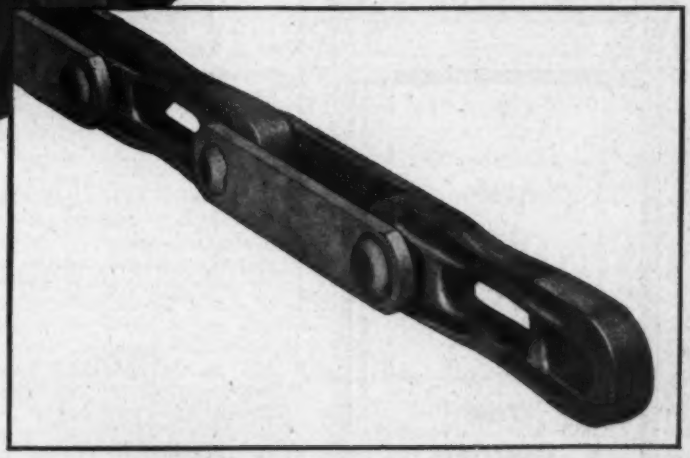


❶ STRENGTH, TOUGHNESS, LONG LIFE! These are the requirements for a good paper mill conveyor chain. Here's the chain that combines all three . . . the new Rex 8000 series chain.



❷ TAKE THIS REFUSE CONVEYOR. Carrying that load is child's play for Rex 8000 series chain. It's built to carry the heaviest loads and to take the pounding of logs and slabs without faltering or failing. The exclusive design permits it to take side flex without damage; wear is cut to the minimum.



❸ THIS CLOSE-UP shows the sturdy design of Rex 8000 series chain. The cast block links are heavy-reinforced with struts that serve as anchors for attachments. The bearing surfaces of the block links are wide to provide a large sliding surface and a maximum bearing area on the rivet. These chains are built for the toughest service.

* * *

Rex 8000 series chain is the answer to any problem involving conveying of refuse and handling of logs. The Rex Man can help you with your chain application problems. For complete information about Rex 8000 series chain, write for your copy of Bulletin No. 448. Address Chain Belt Company, 1714 West Bruce Street, Milwaukee 4, Wisconsin.

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Manufactured in every available type for the positive transmission of power, timing of operations and conveying of materials.

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For fast, thorough, uniform pulping of either mixed papers or virgin stocks, use *Bauer double disc pulpers.*
To salvage and turn screenings and rejects into A-1 stock install *Bauer double disc pulpers.*
Two sizes 36" and 24". Plate patterns according to the need.

THE BAUER BROS. CO. SPRINGFIELD OHIO

Bauer

affect the industry's operations under necessary wartime government controls. It is gratifying that both the industry and government are well satisfied with its performance.

The Department of Trade Development has been required to work in close collaboration with various departments of the Dominion Government and representatives in Canada of British Commonwealth and other countries. During the past year, the paper requirements of various countries had of necessity to be arranged through the government agencies. As a result, many purchase orders emanated from our Government. While the placing of these orders did not present particularly difficult problems in so far as the mass production grades were concerned, it became quite intricate to deal with the multitude of specialty grades which some countries required. In this field the Department of Trade Development was able to render service to the government and the industry alike which has been recognized in communications received by the Association.

Statistical services have been continued by W. H. O'Reilly & Company on the same general basis as during previous years. As I told you last year, the censorship restrictions on the publication of statistics on Canadian trade have been eased in so far as pulp and paper are concerned and the basic statistics published last year maintain continuity of data on exports and imports.

Your Association has continued its policy of giving the fullest possible co-operation to the pulp and paper administration. In addition to personnel supplied to the administration on a loan basis, it has complete access to our statistics and has available to it the services of our statistician.

On this occasion last year I left with you what I confidently believed was my final message in these surroundings. It was—that we strengthen the sinews of our unity.

During the past year we did so progress, in a significant way, in establishing, by universal consent, the Joint Executive Board.

We did so in other directions also. By putting our backs into it together, we so bridged a critical year, as to manpower, particularly with relation to wood supply, that nobody relying on this industry has been let down. Production has been maintained at the high level of war-essential needs that outstrips any prewar output of the industry.

We enter this year with the prospect of having a president to devote more time and constructive thought to the Association's affairs than those of us with responsibilities in our company operations can possibly make available.

When he assumes this highly responsible position I bespeak for him that unity of support and understanding you have so graciously and so generously given me. He will be indeed fortunate in having the counsel and advice of Mr. Weldon as chairman of the Executive Board, in whom we all have complete confidence and who I know will receive your full support.

But the weight is easier to handle than the cost—

It is certainly true that under some conditions Standard Thickness or still heavier pipe is absolutely required. But in far too many cases Standard Thickness pipe is chosen for *all* run of plant piping jobs simply because those in charge have gotten "used" to it.

This heavy pipe performs its service well enough. Its only fault is that it's heavier than needed for most low and moderate pressure piping—heavier than needed because light but strong Taylor Spiral Pipe can handle these every day piping requirements just as well as Standard Thickness pipe.

And the superfluous weight of Standard Thickness pipe is a costly fault. It means higher initial cost, higher installation cost, more expensive transportation and handling. As a result, changing over to Taylor Spiral Pipe has in many cases cut the cost of the erected piping to less than half that of an equivalent installation of Standard Thickness pipe.

Made of uniformly strong skelp and reinforced from end to end by the sound spiral welded seam, Taylor Spiral is the strongest type of pipe of its weight. This high strength to weight ratio enables Taylor Spiral to handle, safely, a great many of the jobs ordinarily assigned to much heavier pipe.

Switching to Taylor Spiral for services like those listed below is made practical by the range of sizes and variety of fittings. Thicknesses range from 14 to 6 gauge; sizes from 4" to 42"; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies, are produced by Taylor Forge, assuring a complete service and undivided responsibility.

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- Oil and Gas Gathering Lines
- Swing Pipe
- Spray Pond Piping
- Hydraulic Mining
- Dredge Lines

Why We Should Simplify Our Archaic Standard Bases for Paper and Board

The simplification of the present standard bases for paper and board has been under consideration for some time. In this article Mr. Cobean, a well-known executive with broad experience in both the domestic and foreign paper and graphic arts industries offers convincing arguments in favor of the change.

GEORGE G. COBEAN, President
Bulkley, Dunton Paper Co., S. A.

▶▶▶ WHEN IN 1787 the Continental Congress considered the adoption of the dollar as the monetary unit of the United States some congressmen were opposed to the measure. Today this seems almost incredible since we all realize the tremendous advantages of a monetary unit based on the easy and simple decimal system, as against the ancient, complicated and cumbersome English system with its guineas, pounds, shillings, pennies and farthings. A guinea, as you know, is divided into 21 shillings, 252 pennies, and 1,008 farthings. This sounds almost as complicated and just as senseless as our present standard bases for paper measurements.

The lawmakers who argued against the adoption of the dollar were afraid that the new system would be hard on people used to the old way of figuring in pounds, shillings and pennies. Some argued that business houses would have to change their books and that many mistakes would be made if the "new fangled" money was adopted. Today the opponents of the greatly simplified basic standard of 25 x 40/1000 are using similarly weak arguments. One argument is that the change would involve the necessity of re-education. Another that it would mean re-writing WPB Order L-120.

It is true that the adoption of the new standard would involve both re-education and re-writing of Order L-120, but it is equally true and evident that the job of re-education would be much simpler than it seems, and only those who fail to grasp the real simplicity of the proposed standard will continue to oppose it. Anyone truly interested in the subject can convince himself of the great advantages inherent in the simplified standard, and only those who approach the subject with a closed mind will not see the light. The argument against changing Order L-120 because it is sufficiently complicated defeats itself. The very fact that L-120 is so complicated is largely due to the antiquated and complex system on which our standard measurements are based. Simplifying the system, as the proposed change is designed to do, would automatically simplify the order itself.

A uniform, simplified standard of measure of basic weights for all paper and board has been advocated many times. About a year ago the Joint Committee on Government Relations of the Commercial Printing Industry proposed again the uniform system whereby all paper would be measured on the basis of 25 x 40 inches with a standard sheet count of 1,000, conveniently expressed as 25 x 40/1000. Since the proposed basic size of 25 x 40 inches equals exactly 1,000 square inches, and the standard sheet count of 1,000 is likewise a decimal figure, it is obvious that estimating paper or board size on the new basis would become exceedingly simplified. Today paper manufacturers, converters and users have to struggle with such standard bases as 17 x 22/500, 18 x 31/500, 20 x 24/500, 24 x 36/480, 20 x 25/500, 20 x 26/500, 25 x 38/500 and many others, including such monstrosities as 22½ x 28½/500 and 25½ x 30½/500. If anyone is able to keep in mind all these figures, let alone use them in his daily work, there should be no trouble in re-educating him.

As far back as 1917 the National Bureau of Standards and the Government Printing Office adopted the 25 x 40/1000 basic standard and proposed its adoption to the entire paper industry. The industry, however, did not accept the proposal. For people who believe in saving time, who strive for efficiency in business, and who

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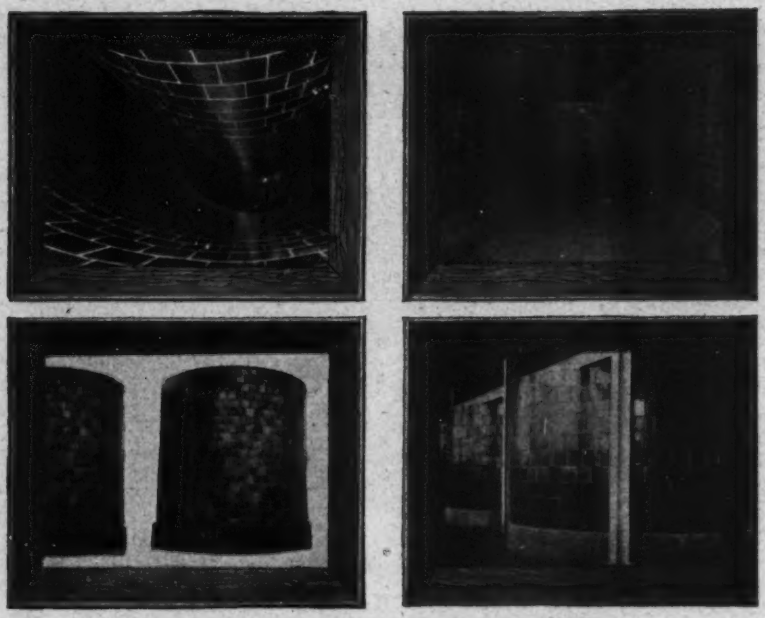

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are not afraid of sweeping away the useless cobwebs of tradition that cover our cumbrous practice of measuring paper and determining basic weights, it must seem incomprehensible that there should be any real opposition to the proposed simple, sound and logical system.

Let us take for example the practice now prevalent in buying and selling Fancy Box Covers, Friction Glazed and similar papers. These are generally made, sold, and used in rolls, yet their price is based on hypothetical reams and sizes varying with the different grades. The manufacturer of such papers buys his coating stock on the basis of a theoretical 500 sheet ream, size 20 x 24 in. When he sells his product the unit pricing basis capriciously changes to another theoretical 1000 sheet ream, size 20 x 26 in. And the paper is still uncut and in rolls! The confusion and mistakes resulting from this idiotic system of figuring are well known to members of that branch of the industry.

Nor are the mistakes and confusion limited to that one particular branch. Apart from the fact that untold man-hours of estimating time would be saved by the new system for mills, printers, packagers, merchants, jobbers, etc., the possibility of errors would be minimized, and estimating would become child's play compared to the present cumbersome and intricate system based on dozens of different measurements and varying sheet counts.

The adoption of the 25 x 40/1000 standard would open up the way to further simplification of our present archaic weights and measurements. Once the first step was made in the right direction and people discovered the amazing simplicity of the decimal system as against the clumsy complexity of inches, feet and pounds, there would probably be a popular demand for the adoption of the metric system throughout the paper and graphic arts industry. I do not hesitate in saying that the adoption of the metric system would be one of the greatest boons to these industries.

The metric system, which as you know is on the decimal basis, is not only far, far simpler but also much more accurate than our present way of figuring. Figures in the metric system can be reduced indefinitely by the mere shifting of the decimal point and without running into such terrible fractions as 1/16, 1/32 etc.

For the benefit of those who are not familiar with the system as applied to paper and board, let me describe it briefly:

The base weight for everything from tissue to board is stated in terms of grams of weight of one square meter of one sheet of paper or board (1 lb. = 453.6 grams, and 1 sq. meter = 1,550. sq. inches). The metric system being on the decimal basis, it is extremely simple to determine the ream weight of any size by first ascertaining the area of the sheet in centimeters (1 centimeter = .3937 in.; 100 centimeters = 1 meter) then multiplying these by the number of sheets in the ream, and finally pointing off 4 decimal digits (10,000 sq. centimeters = 1 sq. meter). The resulting figure shows the weight in kilograms per ream. (1 kilogram = 2.2046 lbs.)

To anyone not used to working with meters and kilograms the above might seem complicated. However, it is in fact so much simpler than our present system, that the average person equally familiar with both can save more than three-quarters of his time in calculating weights and measures on the decimal basis as against the other system. The relationship between kilogram, centimeters and feet and pounds may be compared to that existing between pounds and shillings and dollars and cents. Who would for one minute doubt that our monetary system is simpler, better and more efficient than the one used by the British?

The metric system, not only for paper, but for every commodity, is used in every civilized country in the world except in the United States and the British Commonwealth of Nations. Adopting it at this time in the paper and graphic arts industry would be a revolutionary change. The industry may not be ready for such a drastic change coming without a transition. However, the proposed simplified standard of 25 x 40/1000 which introduces the elements of the decimal system is very definitely a step in the direction for which we should be headed. Once we made that step it would become evident to the members of our two great industries that the millions of man-hours wasted in the past in stupid, complicated calculations could have been saved and turned to much better use.

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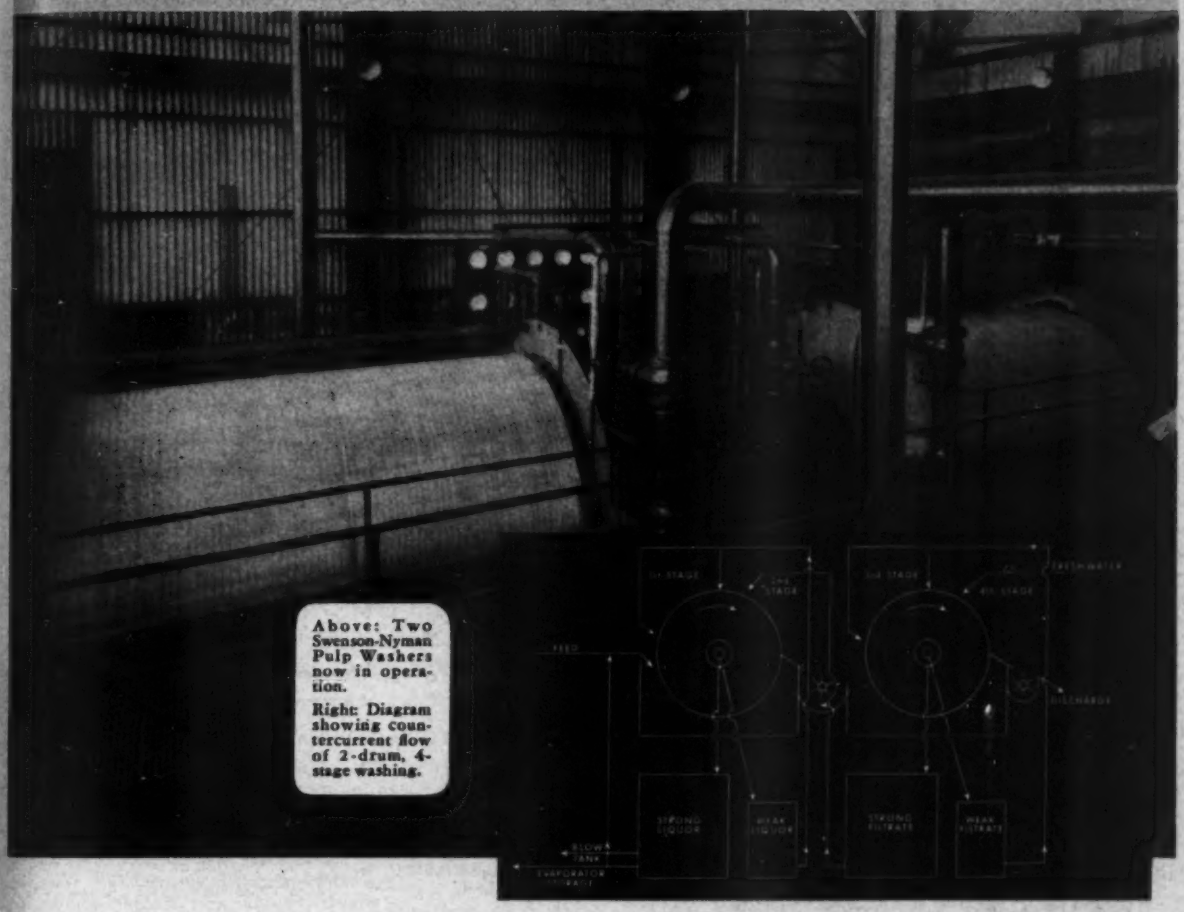
How to Double Pulp Washing Efficiency



Above: Two Swenson-Nyman Pulp Washers now in operation.

Right: Diagram showing countercurrent flow of 2-drum, 4-stage washing.

In most installations two (and sometimes three) drums have been replaced with a single Swenson-Nyman Washer . . . because it gives double the efficiency obtained with other washers.

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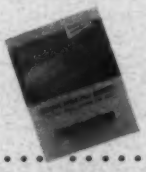

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Please send me Bulletin F-104 about Swenson-Nyman Pulp Washers.

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Convention Papers . . . Abridged

This is the final installment of abridgments of papers presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, held in New York City, February 14-17, 1944.

Postwar Implications Affecting the Paper Industry

MAURICE DEUTSCH, Consulting Engineer

It is only with the development of new products and new methods of manufacturing the same, that the economic stability of the postwar world can be assured. The paper industry may be an important factor in the future through the continued development of its present products and by the adaptation of engineering principles which heretofore have been neglected.

One of the first products in which paper is a principal component to conform to engineering principles is the *Dur-I-Cell* system. In this application, waterproof paper forms are so constructed that they may be used in concrete work. The "grid and box girder" principle makes it possible to develop the strength necessary for the prefabrication of panel units which may be used in housing and in all types of construction jobs. The special paper core is used as the mold into which concrete is poured and it is left as a permanent part of the structural unit. The form is so constructed that the panel in addition to having the required strength also has the cellular nature which is so necessary for excellent insulation properties.

The value of this product is further enhanced in that the form, which is made of corrugated or solid paperboard, may be covered with materials such as plastics, plywood, or metal to form a section complete in itself for those applications in which concrete is not necessary. The use of cement or concrete is most advantageous when permanence is desired as it is able to withstand more severe climate conditions and greater stresses.

This development in which paper is a basic component has a promising future in that it possesses the essentials required for structural work: namely, permanence, rigidity and strength, good insulation properties, inherent fire resistance, and flexibility of application.

The primary use for a product of this type at the present time is in prefabricated housing. Of course, it is to be recognized that a wider application is to be expected in the future.

The use of these paper forms is not confined to any type of building, being equally adaptable to permanent or demountable housing. The floor, wall, and roof units may be made using concrete to secure the necessary structural properties while other combinations can be used for those units which do not have undue strain imposed upon them such as partitions or insulating barriers.

Many of the war uses for this type of product are readily apparent such as in the construction of light weight demountable buildings and barracks which can be assembled rapidly. In their heavier form in which concrete is used, bombproof shelters, and the like may be erected quickly with a low labor requirement, saving the wood normally used. The cells of the paper forms may be filled with sand to prevent damage from incendiaries and shell fragments.

Aside from the varied uses of the cellular paper panel in construction work, necessary for the protection and housing of military personnel, by changing the design, these same forms may be readily converted into pontoons and floating platforms which are required in fording and docking operations.

This panel development is also of great importance to the shipping industry. Much has been written of late regarding the construction of concrete ships during the rearming period of both World War I and World War II. That they have not been entirely successful can be traced to numerous factors, but it is believed that the use of these special panels would aid in the solutions to the problems involved.

Lifeboats and rafts can be made of very high buoyancy and of such design that they can be suspended from ceilings and located

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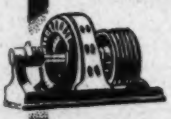

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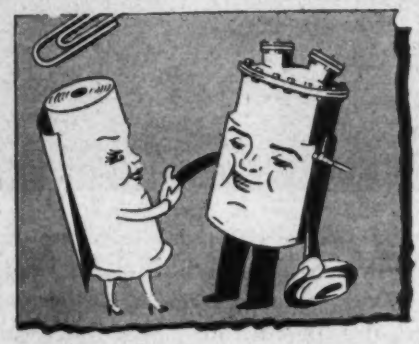

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Well known and proved is the corrosion resistance of Monel to pulps, paper mill stocks and white waters, caustic liquors and cleaning solutions of dilute muriatic and sulfuric acids.

Of equal importance is that Monel wire faces and winding wire are combined *safely* with bronze cylinder parts under corrosive conditions generally met in stock preparation.

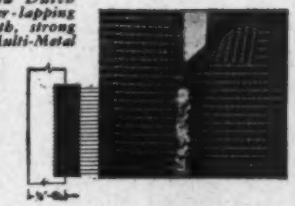
Add to those qualities a rigidity almost twice that of bronze ... add high strength, and resistance to abrasion and wear ... and you have the reasons why mills report up to 10 years of continuous performance for Monel on washers, thickeners, cylinders and filters. And remember that Monel wire cloth is *lowest* in cost among wire cloths of comparable high strength and corrosion resistance.

For further information on Monel wire cloth, write for your copies of *Performance and the Reasons* and Bulletin C-3, *Monel, Nickel and Inconel in Pulp and Paper Mills.*

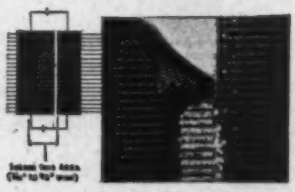
THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

Monel

Seams for Monel faces are readily made by silver soldering or welding. This improved butt joint for corduroy and twilled Dutch weaves eliminates over-lapping and produces a smooth, strong seam. Developed by Multi-Metal Wire Cloth Co.



1 ¾" x .014" Monel strip spotwelded to under side of one end. ½" to project.



2 Bring cover around to close fitting butt joint. Solder cloth to Monel strip and over butt joint.

ESTABLISHED TYPES OF MONEL WIRE CLOTHS for PULP and PAPER MILL SERVICES		
	Monel Backing Screens	*Monel Top Screens*
Pulp Thickeners		
VACUUM FILTERS	10, 12, 14 mesh*	40, 50, 60 mesh
SAVE-ALLS	10, 12, 14 mesh*	50, 60, 70, 80 mesh (12 x 64 corduroy cloth used without backing screen)
Unbleached Stock Washers		
VACUUM FILTERS	10, 12, 14 mesh*	30, 40, 50, 60 mesh
DECKERS AND CYLINDERS	12 x 64 mesh Monel and 14 x 88 mesh Monel corduroy cloth used without backing screen	
*Alkaline Bleached Stock Washers***		
VACUUM FILTERS	10, 14 mesh*	40, 50 mesh
BOARD MACHINE CYLINDERS	10, 12, 14 mesh	30, 40, 50, 60 mesh
BEATER WASHER		40, 50, 60 mesh
Lime Sludge Filters		
VACUUM TYPE	14 x 100 mesh Monel, 24 x 110 mesh Monel, 200 twilled Dutch weave Monel and "AU-Type" extra heavy braided weave Monel filter cloth	
Water Filters		
CYLINDER AND VACUUM TYPE	12 x 64 mesh Monel, 14 x 88 mesh Monel 80 mesh twilled Monel (wire dia. 0.007") 100 mesh twilled Monel (wire dia. 0.005") 120 mesh twilled Monel (wire dia. 0.004") 120 x 140 mesh twilled Monel (wire dia. 0.004")	
CLAY AND COLOR STRAINERS	150, 200 and 325 mesh Monel	

*10 mesh recommended for increased open area and drainage—**For chlorinated, acid-bleached stock washers Type 316 nickel-chromium-molybdenum alloy steel recommended.

This classification table is offered for your guidance through the courtesy of the Multi-Metal Wire Cloth Company, N. Y. *Write us for copies.*

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on the deck where they are instantly made ready if the occasion arises.

Their application to ship construction precludes the use of these panels in ship salvage as it was by the division of the *Lafayette* into sections from which the water was removed by controlled pumping that this great ship was righted. The flexibility and light weight of the panels is a primary advantage in this type of work.

From ship salvage to the construction of cofferdams is logical as similar principles are applied. A successful application was made of these units in the erection of the Edison Memorial Bridge where it was found that they performed satisfactorily from the structural standpoint at a considerable economic advantage in regard to material costs and time.

The future of paper base laminates has already been the subject of many discussions, and numerous items are now being made for a wide variety of uses. One use which has captured the public's fancy has been the introduction of laminated materials into airplane construction. It should be realized that the very factors which make it valuable for planes are the ones which apply equally well to the construction of homes and buildings which are planned for the future.

Paper pipe made with thermosetting plastics such as Texet or Duro-Film can be used to handle almost any liquid or as conduits for electrical wiring. In larger sizes, they can be used for ventilating purposes. The machinery is used for spiral convolute, or concentric winding of paper tubes.

An example of their practicability is a waterpipe made of paper and coal tar pitch which was in service for 62 years (1865-1927). The line was a mile and a half long connecting the town reservoir with the Boston Rubber Shoe Company at Malden, Mass., and was laid underground with a section passing through marshy ground so that in places it was wet inside and out for the entire length of service.

Many new materials have been brought forth in late years which improve on the coal tar and paper combination and the application of these compounds will produce a very strong and lightweight pipe or tubing. One paper company even now is manufacturing a paper pipe for use as drains and soil pipe. Then, too, a paper pipe has been developed which can be threaded in the conventional manner; is acidproof, and will withstand temperatures of 250 degrees.

There are many other uses for paper available when the newly developed war technique in chemistry, physics and engineering is applied. It is up to the engineers in the paper industry to co-ordinate and let the engineers associated with designers and contractors and with government agencies, know of the characteristics of these newly developed papers and paper products, and the benefits which they will contribute to postwar public welfare.

One of the most important needs of the industry will be a national research agency under the management and direction of the industry and for the benefit of all associated therewith. There are many new materials

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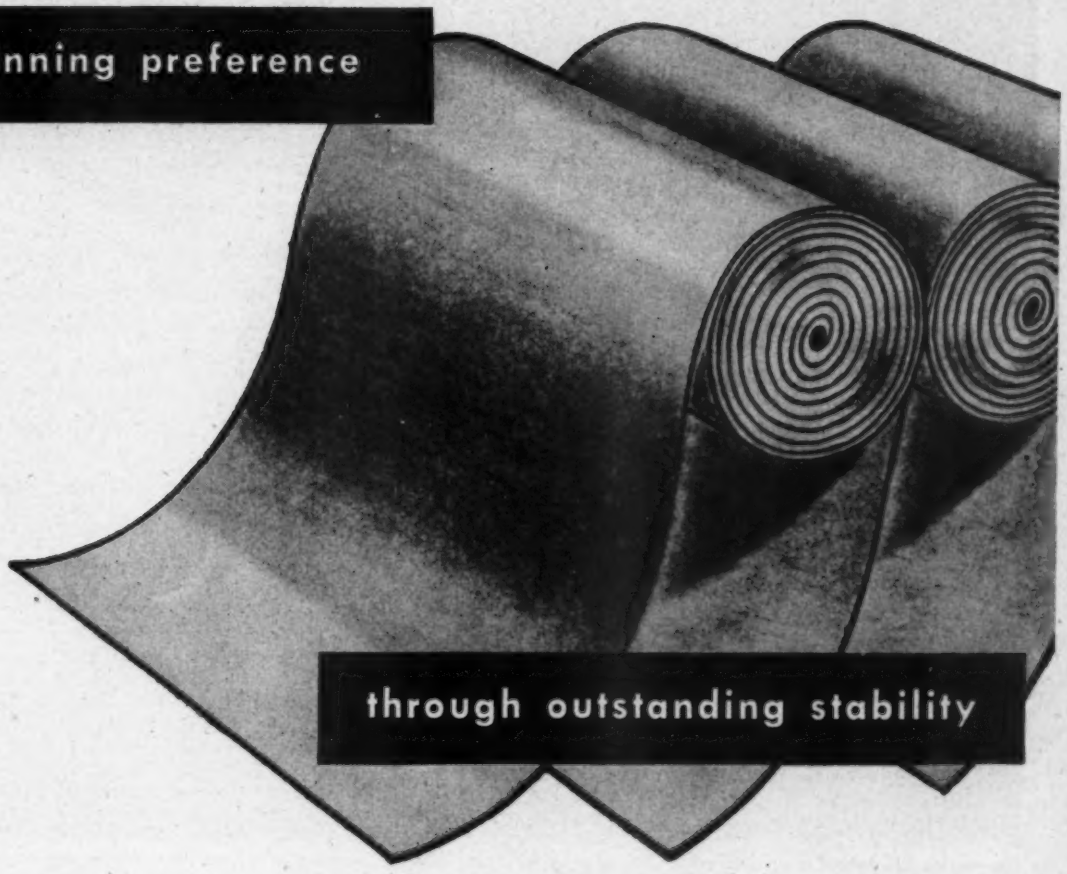

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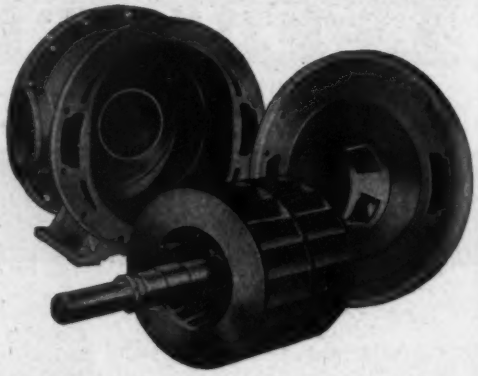

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and methods to be segregated and those most useful co-ordinated so that they may be put to early use. Through a central research agency, these various improvements in manufacture and conversion of paper may be developed and distributed to those firms equipped to make use of same. Those thus aided will contribute proportionally to costs of such research agency.

Engineering has flooded the public mind with such rapid progress in technological improvements for constructive and destructive purposes that it now behooves the engineer and economist to realize that postwar readjustments will require serious consideration of the effect on present and future financial and social stability and security and to find remedies to prevent more dangerous consequences than even war.

Only brief reference can now be made to a very important remedy, a new credit system. After several years of careful research, this is now coming to the front for consideration by many government, banking and industrial agencies.

A method has been found that should do for the paper industry and others more than any other heretofore applied system to stimulate employment of capital and labor so that it will maintain security and stability for capital (the people's money) and labor (the people's wealth). The underlying principle of all modern insurance is basic and mathematical honesty. By the application of actuarial (mathematical) formulas it has been found possible to employ a system of so-called life insurance of property that would be similar in application to the established principle of human life or endowment insurance.

On May 19, 1937, Gov. H. H. Lehman, of New York State, signed the first property-life insurance legislation in America. Similar legislation was passed in Illinois in 1938 and is pending in other states. The insurance laws of New York State have been amended, permitting the application of carefully defined insurance rules, so that a building, machine, ship, utility, railway, or other tangible property may be insured by well-organized insurance companies, operating under state supervision. By the payment of an annual premium to such insurance company (usually not more than the bookkeeping item of 3% entered for depreciation but generally representing a bookkeeping item only, and no cash reserve) a carefully developed system of property-life insurance is applied. This would function about as follows:

After the life-period of a property or equipment to be insured has been determined and sufficient amount of such insurance business has been set up, upon payment of an annual premium, the insured will receive from the insurance company at the end of the life-period, the sum insured, which is intended to be the replacement value of the property. During this life-period, in the event of damage or destruction of any machine or structural part of the building, foundation, walls, roof, etc., the amount necessary for the replacement of same may be obtained from the insurance company, similarly if marked depreciation and obsolescence after the first few years warrant changes be made in the structure. Such paid amounts, are, however, deducted from the full-insured-amount that would be due at the end of the insured life-period of said property. Such replacement insurance

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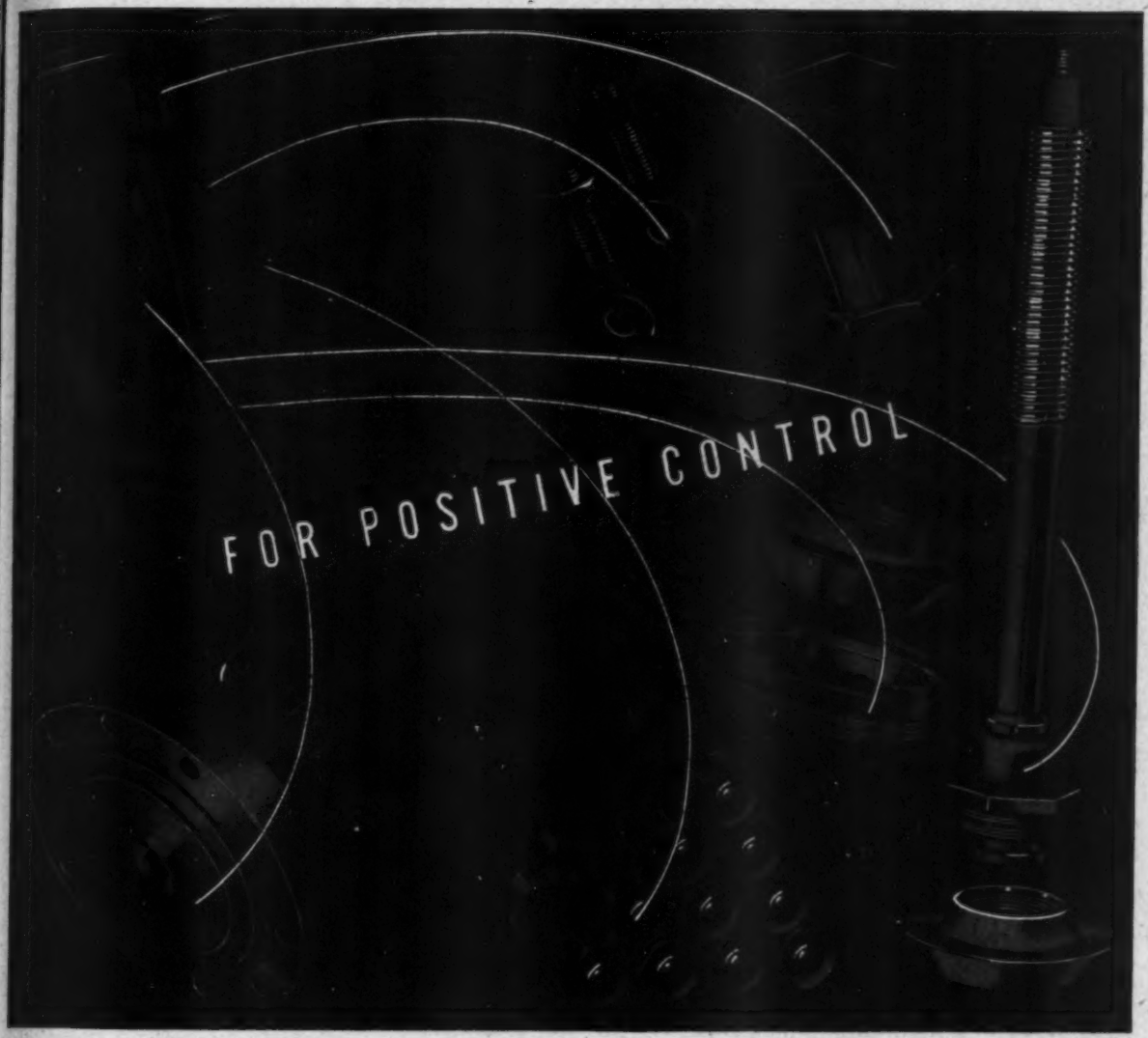

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The application of property-life insurance, together with sounder methods of production, standardization, distribution and merchandising by stimulating a more stable system of employment of capital and labor will not only bridge the gap of conversion from war to postwar, but introduce factors that will do most to strengthen our democratic form of government.

Demineralizing of Water for the Pulp and Paper Industries

ESKEL NORDELL, Technical Dept.
The Permutit Company

In demineralizing water by the ion exchange process, the water used may be a naturally clear well water, a filtered surface water, properly treated effluents from the cold lime softening process, or the cold lime and magnesia silica removal process. Commonly speaking, such waters contain various salts such as the bicarbonates, sulphates and chlorides of sodium, calcium, and magnesium.

At the dilutions obtained in such waters, these salts are practically completely ionized. Therefore, the salts, as such, are not actually present. Instead, the water contains cations of sodium, calcium, and magnesium and anions of bicarbonate, sulphate, and chloride. Certain other cations and anions, such as the cation of potassium or the anion of nitrate, may also be present. As these latter are usually present only in small amounts and as their removal is effected by the same reactions as the others, the reactions, for the sake of simplicity, will be limited to the more abundant ions.

In the ion exchange demineralizing process, there are two main steps and an optional third step. In the first step, the water is passed through a hydrogen ration exchanger. This removes the cations of sodium, calcium, and magnesium and re-

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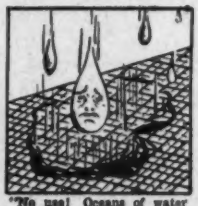

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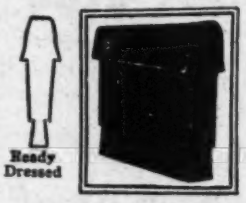

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places them with hydrogen ions. In the second step, the effluent from the first step is passed through an anion exchanger (or acid remover) which removes the anions of sulphate and chloride (or their corresponding acids). The bicarbonates are transformed in the first step to carbon dioxide and water. This carbon dioxide goes through the second step unchanged. If the carbon dioxide content of the effluent from the second step is objectionable, for the purpose intended, then the optional third step—aeration may be used to remove it.

In the familiar sodium zeolite process, hard water is softened by simply passing it through a bed of granular sodium zeolite which has the ability to abstract calcium and magnesium cations from the hard water and replace them with sodium cations. Thus the bicarbonates, sulphates, and chlorides of calcium and magnesium present in hard water are transformed by the softening process into the corresponding salts of sodium.

Hydrogen cation exchange with siliceous zeolites is impractical because a regenerating acid would decompose the zeolite.

With the advent of organic cation exchangers, this latter limitation was removed. Organic cation exchangers are synthetic materials which not only are capable of carrying out all of the cation exchanges which may be effected with the siliceous zeolites, but in addition may be used to exchange hydrogen ions for metallic ions. Utilization of this fact constitutes the first step in demineralization.

The coal derivatives, such as Zeo-Karb, were the earliest organic cation exchangers developed and have been most extensively applied in practice. Installations have been operating for a number of years and for thousands of cycles without deteriorating physically, dropping in capacity, or developing colored effluents. It appears that although some resins are slightly higher in capacity, a good sulphonated coal is more resistant and has greater stability. In physical properties, Zeo-Karb is a hard, black, granular material which weighs approximately 30 pounds per cubic foot when shipped.

When regenerated with sodium chloride, the principal advantage of these organic cation exchangers over zeolites is that, being nonsiliceous in nature, they eliminate the danger of silica pick-up by the water being softened. They do not, of course, reduce the total mineral salt content, but act similarly to the zeolites.

When an organic cation exchanger is regenerated with an acid, such as sulphuric acid, instead of sodium chloride, it requires replaceable hydrogen ions. The cation exchange material, when so regenerated, is the H exchanger whereas, when regenerated with sodium chloride, it is the Na exchanger. Water containing mineral salts, when passed through a bed of the H exchanger, loses metallic ions to the exchange material and gains hydrogen ions in exchange. In this manner, not only are the cations of calcium and magnesium removed but also the cations of sodium or any other metallic cation present.

While the hydrogen cation exchanger will completely remove bicarbonates, most waters also contain appreciable amounts of sulphates and chlorides. The removal of these requires, therefore, a second step to eliminate the sulphuric acid and hydrochloric acid formed in the first step. This is accomplished by means of certain synthetic organic materials known as anion exchangers or acid absorbents. The latter term may be the better one as the reaction is probably an absorption of the entire acid molecule. However, the term anion exchanger is more widely used. In any event, they will remove acids from water completely, and can be regenerated, thus renewing their capacity for acid removal.

The earlier anion exchangers, such as *m*-phenylene-diamine-formaldehyde resins and the insoluble basic dyestuffs, were not very successful as their capacities were rather low, they had a tendency to throw color and their life was quite limited. As a result of intensive research work, new products were developed which got away from these undesirable properties. Typical of these new anion exchangers is the aliphatic amine resin, De-Acidite, a granular brown resin which weighs about 40 pounds per cubic foot when shipped.

When a water containing hydrochloric or sulphuric acid or mixtures of these is passed through a bed of granular anion exchanger, the acids are quantitatively removed. After the useful anion removing properties have been exhausted, the exchanger may be regenerated with a solution of soda ash. These cycles of anion removal and regeneration may be repeated

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for hundreds of cycles with only a small drop in capacity, no color contamination and no rise in the electrolyte content of the effluent. It is still too early to state that the life of these anion exchangers equals that of the resistant sulphonated coal cation exchangers which have been operating day in and day out for years without any apparent drop in capacity, but, to date, commercial installations of anion exchangers have performed satisfactorily.

Silica, however, is not removed by this process and, in those cases where silica removal is of importance, it should be done as a preliminary step before the demineralizing process. For most applications, the silica content of the raw water is low and, except in the treatment of siliceous water for high pressure boilers, silica removal is usually unnecessary.

Removal of mineral salts effected by this demineralizing process compares very favorably with removal by distillation.

As far as operating costs are concerned, they are principally for the regenerants used.

Demineralizing plants are available in a wide range of sizes to meet any industrial requirement. Plants installed and under construction have ranged from as low a flow rate as 1 gpm up to many thousands of gpm. Due to wartime restrictions, the demineralizing process has as yet found but few applications in the pulp and paper industry. One of these is in the manufacture of dielectrics where it has been successful both in improving the product and in reducing operating costs.

There will, of course, be many other applications in the pulp and paper industry, and a certain amount of experimental work has already been done on a number of these. In general, it may be said that this ion exchange demineralizing process is applicable to the manufacture of articles that require a low ash content or a low hardness, low chloride, or low sulphate content. It has also found many applications in the manufacture of various plastics and other synthetics.

In most of these cases, the process is applied to only a small fraction of the total water employed for obviously there is no need for demineralizing until the electrolytes have been rinsed out to about the concentration obtained in the mill water. Then demineralized water is used for the final stages. Therefore, the cost of demineralizing applies to only a fraction of the total process waters and, with most natural water supplies, this works out at a very reasonable figure. It is, therefore, to be expected that this ion exchange method of demineralizing water will find many postwar applications in pulp and paper mills.

Hot Melt Coatings

JOSEPH W. VINER[1] and BERT C. MILLER[2]

This paper concerns a method that has been developed over the past several years to increase the utility and appearance value of papers. In this process molten plastic materials are applied to a base stock at a good speed of production and without the use of solvents or other vehicle carriers for the solids. This eliminates fire hazards, the loss of solvents, and improves the quality over those products produced by the solvent method.

The hot melt method is to apply the solids in molten form without any solvents. The stock cools immediately and goes into the rewind roll as a finished product with the qualities imparted by the particular hot melt selected.

(1) Vice President, International Printing Ink Div., Interchemical Corp., (2) President, Bert C. Miller, Inc.

It has been necessary to do much research for definite "hot melt compositions" that will accomplish various utility purposes. These efforts have resulted in a variety of hot melts that will provide practically all of the qualities desired.

There are, for instance, hot melts that give:

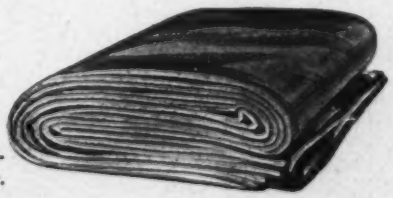
(a) appearance of high luster only
(b) appearance of high luster with grease and water proofness
(c) good finish, with high moisture proofness
(d) alkali proofness or resistance with high finish
(e) grease resistance with high finish
(f) heat seal with moisture resistance and grease resistance
(g) good folding qualities

There has been no attempt to make hot melt coated papers with surfaces suitable for printing. Almost all the work has

The proportion of water to solids in milk, eggs and the juices of fruits and vegetables is about the same as that in the pulp at the wet end of a paper machine. The problem of the processor of dehydrated foods is to *remove all the water* without destroying the nutrients and flavors by excessive heat. "Just add water—and serve."

The problem of the paper manufacturer is to remove *only the surplus water* without destroying the life and elasticity of the sheet by excessive heat at the drier rolls. No amount of water added to a brittle sheet of paper will restore its usefulness.

This explains why leading paper manufacturers equip their machines with Hamilton Felts. By extracting more water at the couch and press, Hamilton Felts reduce the amount of heat needed at the rolls and eliminate possibility of scorching the sheets or making them brittle. Machines may be run at top speeds without danger of broke.



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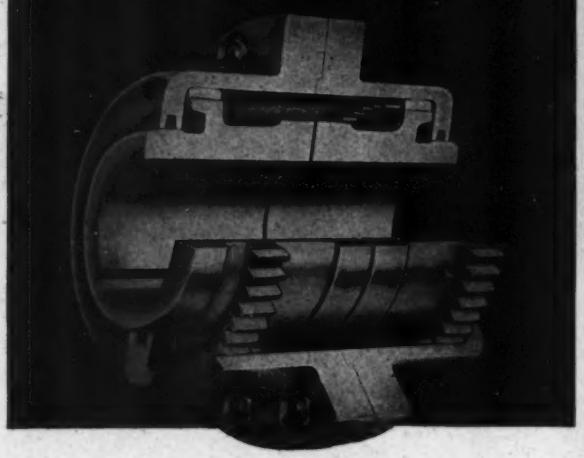

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been along functional lines or to improve the appearance of the paper.

The hot melts are generally of two types: (1) those which require a high temperature of 300 to 400 Fahr. to obtain the proper viscosity of the molten coating, and (2) those that may be applied at less than 300 Fahr.

In the high melt range, it is necessary to use a gravure type of application, in which the fountain and the gravure cylinder are heated to at least 300 to 400 Fahr. The melts under 300 Fahr. can be run on a gravure machine or waxing-type equalizing rod.

Generally speaking, the high temperature melts need smoothing but not cooling, as they have gloss without chilling. The melts below 300 Fahr. require both smoothing and chilling for the best results.

Most of the coating machines can also be made into laminating machines by the addition of rollers which bring the two sheets of paper together. Laminating is generally done below 350 Fahr.—most of it between 150 to 250 Fahr.

To run hot melt coatings and hot melt laminates proper temperature range must be used. For best results with the high melt range materials, it is generally found that both the fountain and the rolls should be oil or electrically heated. For the lower range, steam, if available, is sufficient.

The solvent type of lacquer has a natural flow-out which results in a smooth coating. Hot melts on the other hand set very rapidly and do not smooth out to a gloss finish by themselves. They must be smoothed out mechanically by a so-called heated doctor roll or heated smoothing bar which comes in contact with the hot coatings immediately after their application to the base stock. The smoothing bar or roll remelts the coating, giving the surface both a continuous film and a high gloss.

A great deal of thought and engineering work is being expended on the development of a machine which will run all weights and sizes of paper or board through the hot melt process. There are some very difficult problems attached to this, but it is believed that, sooner or later, they will be overcome.

For each melt and each paper surface there is a certain running temperature at which these materials should be applied to the paper in order to obtain the proper film thickness.

Many different formulations are necessary to accomplish the various utility objectives. There are certain definite tests set up for the determination of gloss, heat seal, blocking, folding qualities, and the resistance to water, moisture vapor, greases, and alkali. The selection of melt must depend upon the result desired. There is no one melt which has all these characteristics.

There is no loss in hot melt, 100% of the material is used for coating. Since a very thin coating generally accomplishes the purpose—if the film is continuous and if proper paper is selected—the coat is not excessive. Hot melts, generally, are less costly than other methods.

On papers like glassine from 2 to 3 pounds per standard ream will suffice; on book and wrapping papers, from 4 to 6 pounds of hot melt may be necessary. For a continuous film with good moisture vapor resistance, grease resistance, or good heat seal, 8 pounds of hot melt per ream may be necessary on most wrapping or bag stock.

It is difficult to state exactly what hot melts will cost unless a specific problem is in mind. But from experience, hot melts for gloss only, as in shelf papers, would probably cost between 20 and 30 cents a pound. Hot melts for grease resistance, heat seal, and moisture vapor resistance might cost between 25 and 50 cents a pound according to the degree of resistance and other qualities required.

It is well in discussing hot melts to bring out the problems that might arise in different situations. These can be enumerated briefly, as follows:

1. Hot melts are generally coated over the finished printed product.

2. In coating hot melts over printed or colored surfaces inks or colored coatings must be selected that will not bleed into the particular hot melt used.

3. It has been found that there is a great deal of difference in the penetration and surface acceptance of hot melts by papers. For both lacquers and hot melts, it is always wise to choose paper with the surface hardness that will require the least amount of coating per ream of paper to get the desired results.

4. The speed of production is entirely dependent upon the machinery used, the

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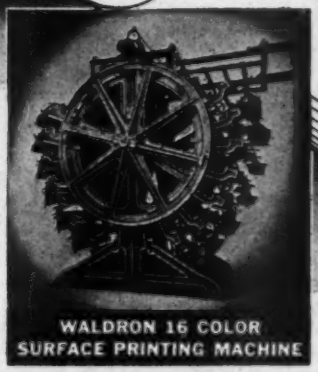

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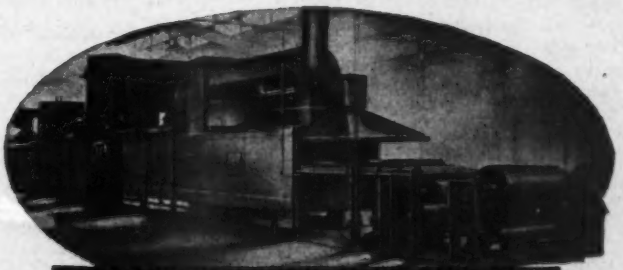

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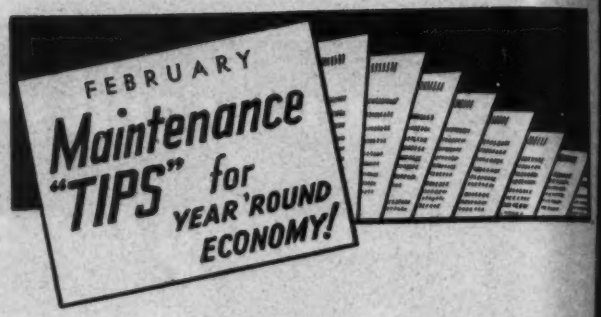

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amount of continuous heat available to bring about the proper viscosity for coating, the heat available for the smoothing bar, and the chilling or cooling prior to rewinding. Normally, the production for coating might be from 50 to 250 feet a minute. Laminating speeds will reach 300 to 500 feet a minute under proper conditions.

5. It is almost impossible to run metallic hot melts and get gloss because the hot melts chill so quickly that there is no chance for "leafing" of the metallic powders.

6. Only a few pigmented hot melts have been made. There is a definite problem in connection with the grinding of certain pigments into the hot melt solutions at the high temperatures.

7. There is difficulty in gluing over hot melts; and it is also difficult to leave gluing strips or gluing spots since the hot melt coating is generally continuous. By the rotogravure method, however, both strips and spaces may be left. It is believed that by working with adhesive companies this problem can be worked out; but it is recognized, nevertheless, that there are difficulties which, to date, have not been overcome.

8. There are also folding problems but these can be corrected by choosing the proper kind of paper, by limiting the film thickness, and by choosing a hot melt that has folding qualities. This is particularly troublesome when moisture vapor or grease proofness in bags or envelopes or other containers where there must always be a fold, is desired.

9. The hot melt method does not add strength to the paper nor does it detract from the strength of the paper.

Postwar Cost Reductions

SANFORD E. THOMPSON, President
The Thompson & Lichtner Co., Inc.

The paper industry is in an unique position for postwar business. Its equipment, except for obsolescence, will be ready for domestic orders without reconversion. On the other hand, if price ceilings are to be maintained, as they probably will be to a considerable degree, high wage rates and scarce raw materials will require lowest possible production costs.

While new machines of latest design open a field for increased production with reduced cost, their acquirement not only requires large capital investment but involves, usually, time to manufacture. Therefore, immediate gains are best offered through internal developments that will improve quality, increase production, and reduce costs.

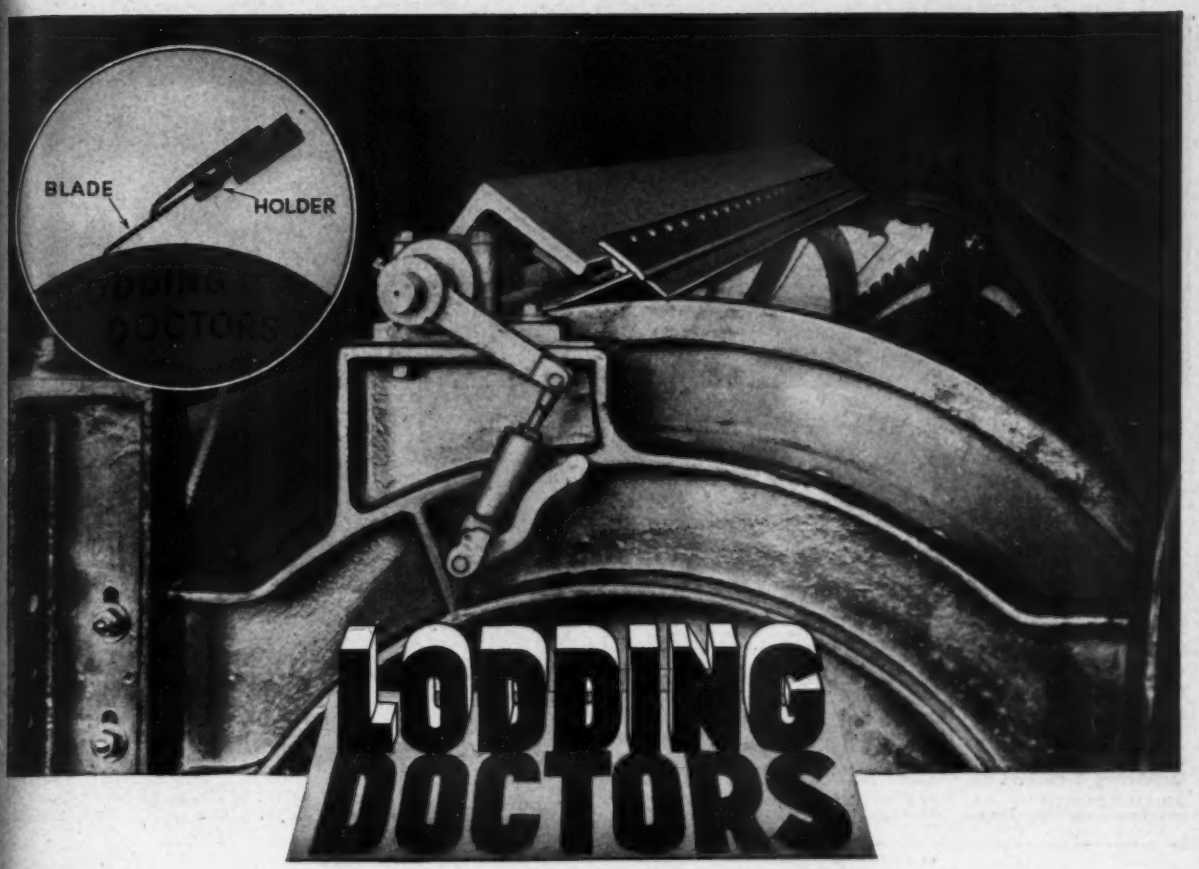
Leading the way to lower costs and larger profits are:

1. Technical control for fixing technical standards
2. Utilization of the technical standards in processing
3. Control of density throughout all wet processes
4. Determination of time standards of performance
5. Utilization of time standards
6. Control of production, based on time standards
7. Development of incentives, either financial or non-financial, for quality and production
8. Budgeting of indirect labor and maintenance
9. Sales promotion through market analysis

Establishment of technical control in papermaking during the last twenty years has been one of the outstanding developments, at least equal in importance to the progress in machines and equipment. But there is lacking, in the processing operations of a vast number of mills a proper maintenance of these standards. It is one thing to establish standards of consistency, weight, moisture, cleanliness, and other qualities. It is quite another thing to establish a control throughout the processing that will require the maintenance of the standards instead of simply recording the attainments as they accumulate and criticising the operator after the event.

In papermaking, in most of the operations, no one factor enters more directly than the amount of water in the stock or paper. While nowadays density of stock in many operations is subject to automatic control, improvement in uniformity can be attained by personal control based on individual judgment of the operative.

In a finished paper, the percentage of moisture is important both from the standpoint of quality and also from profit. Profit



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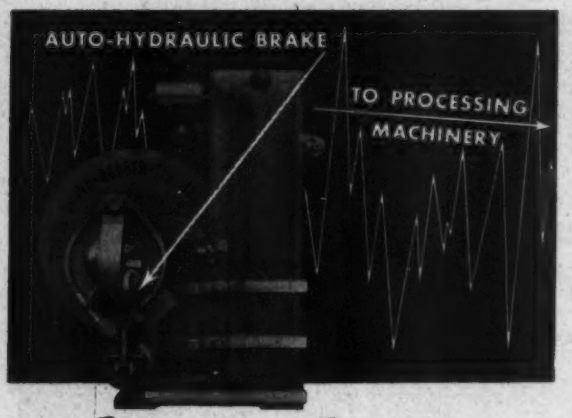

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FOR PAPER MILLS

element applies to paper sold by the pound. A relatively high moisture content consistent with the specifications means that just so much more money is paid for a lot of paper.

Knowledge of the time required for the various operations and runs is essential not only for expediting the individual operations but also as a prime factor in production control, and in cost estimating. Time study with a stop watch of operations in finishing and converting and in the various phases of mechanical and hand labor is the only accurate means of determining time standards that are fair to both operatives and management.

To keep everyone busy, to get orders out on time; to govern the sequence of operations and of jobs, production control requires a definite central authority of one or more persons who will govern the sequences of lots and jobs, and in each department a specially designated person who will see that the procedures are carried out. While most of the best managed mills have well established production control, in many cases too much is left to departmental foremen or to verbal conferences.

The dislocation of normal marketing channels caused by the war are so extensive that most manufacturers will materially benefit their profit position through a careful analysis of markets and study of sales programs. Existing products should be related to the facts obtained from the market research and the line revised where new needs appear. The question "What to sell?" should be followed by "Where to sell it?" and "How to sell it?" Above all, get the facts of your market before the facts get you.

Financial incentives, properly established, give a man or woman an inducement to do their best work by providing an interest in a definite goal as giving them more money. Nonfinancial incentives, namely, the establishment of standards of accomplishment, while less effective than financial, do provide definite goals which, followed up by individual or group records of accomplishment, result in giving an interest, in some cases competitive, which increase production or improve quality, or both. Incentives, if properly worked out and introduced, result in higher quality of product than with day work, because the attainment of the required quality is a factor in the incentive.

Economy in the making of paper is variously effected by: (1) increasing speed of paper machines; (2) increasing deckle width; (3) reducing the number and lengths of shutdowns; (4) reducing cost of raw materials; (5) reducing cost of supplies such as wires and felts; (6) reducing indirect labor.

It is found in practice that the most satisfactory incentive in the papermaking departments is a reward to the group of operatives who are responsible for the production and for the various factors of quality such as weight, strength, moisture, thickness, etc. The makeup of the group depends upon local conditions.

One of the large items of cost in a paper mill is the cost of the felts and wires. It has been found possible to introduce an incentive for reduction in cost of these per ton of paper with a resulting saving of some 20 per cent in annual cost, and with no detriment to the quality of the paper. The reward may be paid chiefly to the men directly responsible for changes with definite qualification to avoid the tendency to make the life of the clothing too long.

In finishing paper and in converting operations that have been on day work with no incentive, it is usually possible to reduce labor cost from one-fourth to one-third and at the same time to pay added incentives for production and quality. This means large increases in unit production. In some operations, the per cent of waste can be cut down one-third to two-thirds. These seem large figures, but they represent actual results in different mills. To do this, however, it is usually necessary to improve the methods of operating rather than to "speed up." In every case, the required quality must and can be maintained.

In many cases, a financial incentive for direct labor is impracticable because the operations are so varied as to require an excessive time in setting rates and maintaining them. The simplest plan in such cases is the "indirect labor budget" which sets a definite goal in accomplishment and in the personnel required to perform it. It sets, in other words, a "mark to shoot at" which can be maintained by the foreman. In all cases known to the writer, and including many of the best managed mills, it has been found possible to reduce indirect labor from 15 to 25 per cent, through indirect labor budgets.

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 2 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS

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HIGH LIGHTS:

Maine's first paper mill was established at Falmouth about 1734, by Samuel Waldo and Thomas Westbrook, and it was first operated by Richard Fry, a papermaker from England.

The State of Maine ranks first in the quantity of wood pulp production, and third in the production of paper.

The University of Maine established the first regular four year curriculum in Pulp and Paper Technology in America. This course was begun in the year 1913.

Maine has 24 paper mills and 30 pulp mills; 83 Fourdriniers, 3 cylinder machines and 85 wet machines. Principal products, book paper, newsprint, wrapping papers, ground wood pulp, sulphite, sulphate and soda pulp.

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In general, the paper industry can make marked improvements in the maintenance of uniform quality and in reducing the cost of manufacture through the thorough scientific analysis of all operating factors. If the paper manufacturers will get all the facts, will measure them accurately, and develop corrections with equal care, then very seldom will the results fail to repay the study many times over in improved quality and lowered costs.

Potentialities of Paper-Base Laminates as Compared with Other Laminates

ALFRED J. STAMM, Principal Chemist
Forest Products Laboratory

Paper-base laminates are high in importance among laminates. Although the amount of paper going into paper-base plastics is only a fraction of a per cent of the total production, it is significant that the amount going into plastics increased several fold during the past year.

Up to the present time, fabric-base laminates have perhaps more varied military applications than have paper-base laminates. Asbestos-base laminates, in the forms of both asbestos paper and fabrics, have found only special applications. Plastic laminates made from glass fabric, and a combination fabric with glass in one direction and merely enough cotton thread in the other to hold the glass fiber in place have recently created considerable interest because of their excellent strength properties. Their use so far, however, is quite limited. The glass laminates have been made with both phenolic resins and the newer contact resins, such as Columbia CR39, Laminac, and Plaskon 900.

It is of interest that paper is considerably cheaper than most of the base materials and is as cheap as the cheapest species of veneer. Further, paper requires less resin than any of the other laminates with the exception of wood. The fact that paper is as cheap as veneer on a weight basis may be surprising to many because of the relatively simple processing which veneer undergoes. This is primarily because veneer must be cut from large, quality logs that are both expensive to procure and expensive to ship and handle. Even though wood pulp represents only about 45% yield of the original wood, the veneer yield of quality material is rarely much better than this. It is thus obvious that paper-base laminates have an appreciable advantage over all other laminates with the exception of wood on a cost basis per unit weight of raw materials. The slight advantage of wood, however, can be expected to decrease with time as quality logs for cutting veneer become more difficult to obtain.

Paper normally used in laminates can be impregnated and dried more rapidly per unit length than the other laminating materials, but a greater length must be impregnated and dried per unit weight. Impregnating costs hence should not vary appreciably between the different laminates. Assembly costs may be slightly greater for the paper than for the other laminates because more sheets are involved per unit weight. If this is done mechanically, however, the difference should not be great.

With the newer low-pressure phenolic resins, paper-base laminates can be made with practically maximum specific gravity (1.35 to 1.40) and strength properties under pressures as low as 100 pounds per square inch. Fabric-base laminates and lignin laminates, however, require considerably higher pressures to obtain maximum specific gravity and to avoid delamination. In general, fabric-phenolic laminates and lignin-plastic laminates are made at pressures of 1,000 to 2,000 pounds per square inch. The same is true for asbestos-base laminates. Glass fabric is laminated with phenolic resins at pressures of 100 pounds per square inch or less. It is laminated with the new contact-pressure resins under practically negligible pressures. Ability to lower the laminating pressure is not of great importance in making flat panels, but it is of extreme importance in molding.

The paper-base, cotton-fabric, lignin-sheet and compreg laminates when compressed to practically the ultimate compression, all have about the same specific gravity — about half that of aluminum. The glass- and asbestos-base laminates have somewhat higher specific gravity values than do the other fiber-base laminates, due to the heavier filler.

No systematic differences exist between the water-absorption values. Differences in

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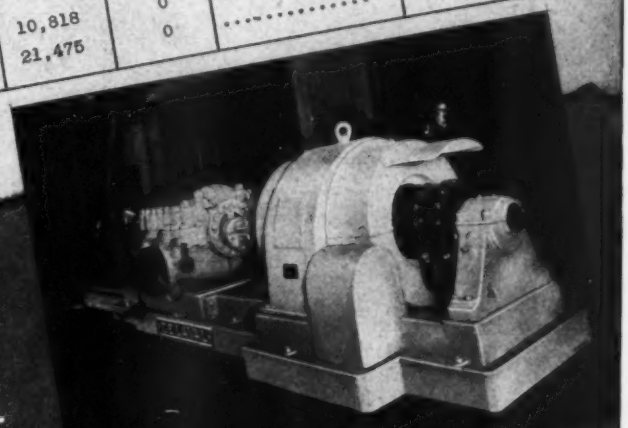
14	1186	260°	12- 2-38	40,383	2	Replace ball locating bearing and shaft sleeves	Negligible
15	1186	260°	10-11-40	28,839	1	Replace shaft sleeves	Negligible
21	1186	350°	8- 4-39	10,818	0	.....	Negligible
16	1186	260°	1- 2-42	21,475	0	.....	5%

Capacity (all units).....1455 g.p.m.



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the degree of precure of the resin and its distribution throughout the structure cause a greater difference in water absorption than do differences in the fiber base.

It appears, from analysis of the properties of laminates made with different fiber bases, that paper-base plastics deserve the important place they are finding among laminates. Although they may have to relinquish some of their present wartime uses to metals, their excellent properties and relatively low cost will assure them many future industrial and structural uses. Further reductions in fabricating costs should assure them a place in house construction and furnishings. Even at present prices, they appear promising for facing of the better grades of plywood. Because of the better dimensional stability and freedom from face checking of plywood faced with a paper-base laminate, this material should find extensive outdoor use.

Hydrolyzed-wood laminates and combined lignin-and-paper laminates also show great promise as competitive building materials. Although their properties are, in general, somewhat inferior to paper-base phenolic laminates, their potentially lower cost will make them desirable for many uses. Plastic laminates made from paper mill products thus appear to have a real future in store for them. This future, however, will be attained only by continual research and improvement and cheapening of products, for those sponsoring other forms of laminate and the metals will extend themselves to the utmost to place their products ahead of laminates produced from wood and wood products in all attractive industrial applications.

Sodium Peroxide Bleaching of Mechanical Pulp—Control of Metal Catalysts in the Bleaching Operation

J. S. REICHERT[1], D. J. CAMPBELL[1], and R. T. MILLS[1]

This paper describes the catalytic effects of copper, manganese and iron on the rate of decomposition of peroxide solutions and suggests methods for deactivating these catalysts in the sodium peroxide bleaching of mechanical pulps.

The following chemicals were used in this investigation: (1) sodium peroxide, containing about 20 per cent active oxygen; (2) hydrogen peroxide containing about 13 per cent active oxygen; (3) sodium silicate, water white, 41.5 per cent Bé, containing 29 per cent SiO_2 and 8.9 per cent Na_2O; (4) caustic soda, U.S.P., 95 per cent NaOH; (5) sulphuric acid, C.P., sp. gra. 1.84; and (6) magnesium sulphate, $MgSO_4.7H_2O$, meeting A.C.S. Specifications.

The effects of *p*H, catalysts and stabilizers on peroxide stability were studied first with alkaline solutions of hydrogen peroxide in the absence of pulp.

These studies were next confirmed under conditions more nearly like those prevailing in the sodium peroxide bleaching of mechanical pulps.

In studying the effects of *p*H, catalysts and stabilizers on peroxide stability in the presence of pulp, a sodium peroxide stock solution was prepared as follows: 50 g. sodium silicate, 20 g. sodium peroxide and 17 g. sulphuric acid were added to 950 cc. of water with vigorous agitation, and the solution was diluted to 1,000 cc. Fresh groundwood slurry was concentrated to about 5.5 per cent consistency. The amount of slurry to provide 50 g. moisture-free groundwood was weighed out. Then 50 cc. of the peroxide solution (2 g. Na_2O_2/100 g. moisture-free groundwood), along with the necessary amount of water to bring the bleached slurry to a 5.0 per cent consistency, was added with good agitation. The treated slurries were stored at 82 F. in covered glass beakers and representative samples were taken at intervals. Liquor squeezed from the pulp samples through cloth was titrated for peroxide with standard thiosulphate solution, using iodide-starch indicator and ammonium molybdate catalyst to accelerate the titration. (Reichert, J. S., McNeight, S. A., and Rudel, H. W. "Determination of Hydrogen Peroxide and Some Related Peroxygen Compounds." *Ind. Eng. Chem.*, Anal. Ed., Vol. 11, No. 4, April 15, 1939.)

At *p*H values of 8 or higher, 0.1 ppm copper is approximately equal in catalytic activity to 1.0 ppm manganese or 10 ppm iron. In this *p*H range and with these

(1) Peroxygen Products Division, Electrochemicals Dept., E. I. duPont de Nemours & Co., Inc.

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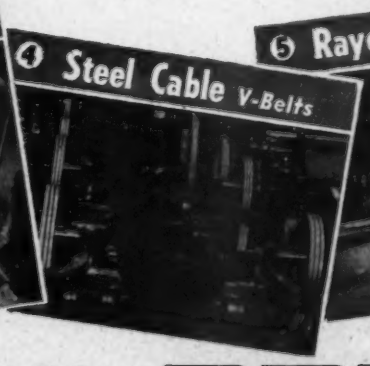

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quantities of catalysts 50 per cent decomposition of the peroxide solutions is reached at 90 C. in 15 minutes or less.

Deactivation of metal catalysts can be accomplished with stabilizers which inhibit peroxide decomposition within *p*H ranges peculiar to each stabilizer. Magnesium sulphate has a stabilizing effect over the *p*H range 9.0-12.0; at *p*H 9.7 this effect reaches a high peak. Sodium silicate also has a small stabilizing effect. However, when sodium silicate and magnesium sulphate are used together the peroxide is stabilized over a wide *p*H range and the stabilizing action is especially effective in the higher *p*H range which prevails in the sodium peroxide bleaching of mechanical pulps.

In our analyses of water from several mills, groundwood white water systems were found to contain a minimum of 0.2 ppm manganese and 1.6 ppm iron. Our analyses of groundwood slurries show that they may contain 0.7-54 ppm copper, 0.4-64 ppm manganese and 8-94 ppm iron on the weight of moisture-free groundwood. Analyses of sawdust from several groundwood mills show the presence of 5-90 ppm copper, 20-45 ppm manganese, and 11-58 ppm iron. These analyses indicate that, in many instances, peroxide stabilizers may be needed for controlling decomposition catalysts in the groundwood bleaching process.

The quantities of metal catalysts normally encountered in groundwood systems may be controlled by the addition of Epsom Salt. Laboratory indications have been confirmed in mill operations. When water containing metal catalysts was used in preparing the bleaching operation, accelerated peroxide decomposition took place; however, the catalytic metals were completely deactivated by adding 1-2 pounds Epsom Salt per 1,000 gallons of water. Also when catalytic metals caused accelerated peroxide decomposition in peroxide-treated groundwood, this catalytic effect was controlled by treating the pulp with a small amount of Epsom Salt (10-15) pounds/ton of pulp) prior to peroxide bleaching. However, when excessive quantities of metal catalysts are encountered in mill waters, it will very likely be necessary to eliminate or decrease them by filtration, if satisfactory bleaching results are to be obtained.

Coloring of Papers and Boards

JOSEPH W. VINER, Vice President
International Printing Ink Div.
Interchemical Corporation

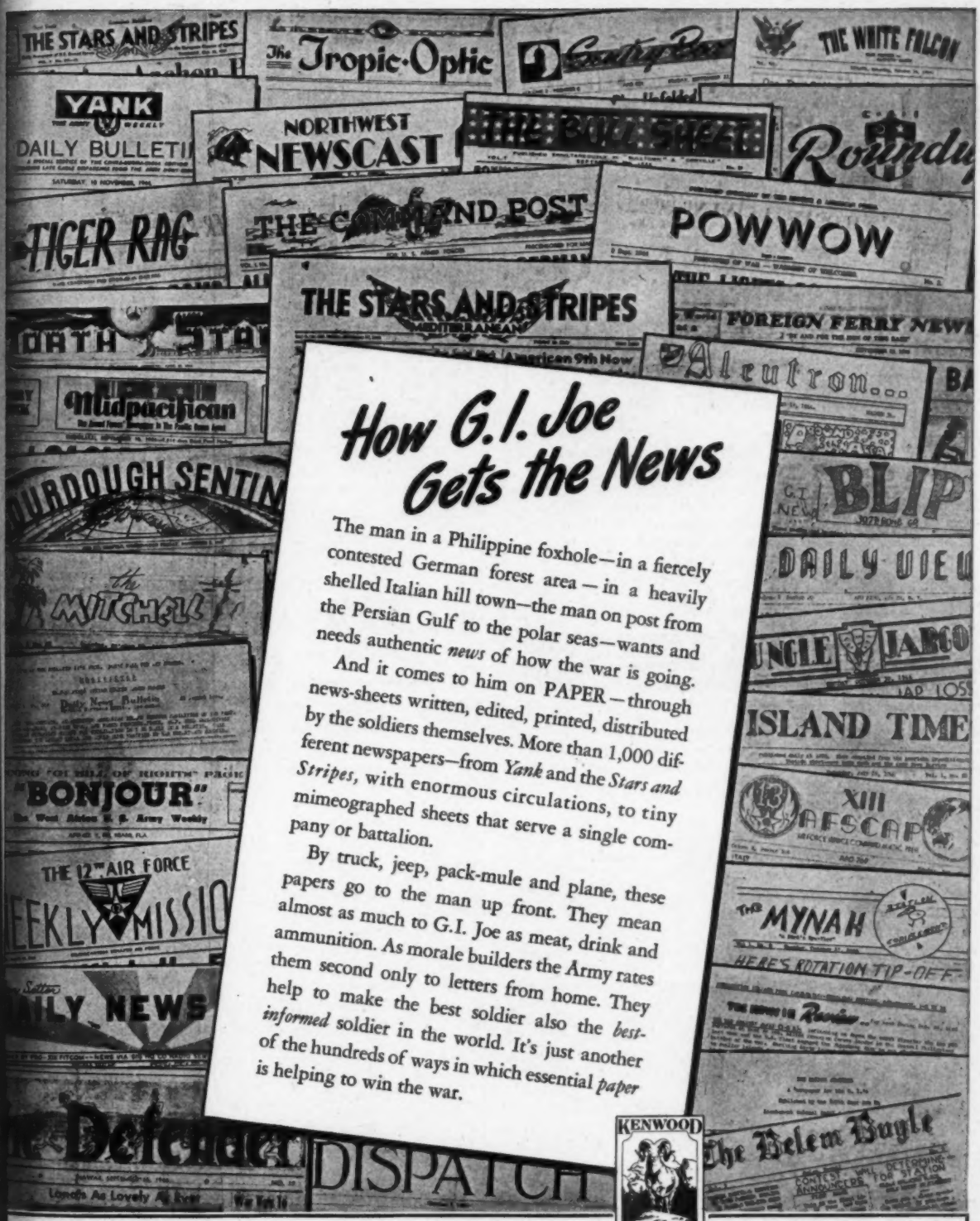
It is the purpose of this paper to bring up points of interest in the economic benefits to be derived from the allover coloring of various papers and boards; benefits which result from the dual color effects and distinctive allover designs obtainable by passing the web once through a machine built for coloring and/or printing. The web may be rewound immediately.

All converters of paper will recognize the economic benefit of being able to carry in their stockrooms one base stock of standard weight which can be colored in any width and in any tonnage, as the demand may arise. It certainly would simplify the inventory stock problem and would enable the sales department to have an enviable sales advantage. It can be done, and at a reasonable cost without too great an investment in machinery and without the need of exceptionally trained pressmen.

This method is not a finished process of coloring or printing distinctive designs on paper or board. Neither is it claimed that it is a process in which all the problems have been overcome; nor is it applicable to all kinds of paper. It is brought to attention to show the progress that has been made in this one method and to stimulate the desire to, by some manner, meet the postwar demands for attractive utility wraps and packages.

The type and color of the base stock is normally dull and in the case of kraft, etc., decidedly brown. These papers can be so processed as to produce all the strong tints and even pastels. By extending the application of this coloring method, two color effects can be attained which may be the superimposition of a varied color design on a colored base. The design may be pictorial or a trade mark. By altering the composition of the color, dull or glossy effects may be produced so that by proper combination a finished package paper can be made.

In addition to the decorative aspects, the same method can be used for producing utilitarian papers such as greaseproof,



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By truck, jeep, pack-mule and plane, these papers go to the man up front. They mean almost as much to G.I. Joe as meat, drink and ammunition. As morale builders the Army rates them second only to letters from home. They help to make the best soldier also the *best-informed* soldier in the world. It's just another of the hundreds of ways in which essential *paper* is helping to win the war.

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Enlarged section shown Screen Plate Hold Down device. (Pat. applied for)

Murray

SCREEN PLATE HOLD DOWN DEVICE

Another improvement to aid production for speeding up cleaning and repairing screen plates—and aiding in production of clean pulp. Blends itself into streamlined design eliminating eddies, etc., in pulp stream flow that causes vacuum leaks. The screw plate holds tighter and better than any other method, and compartment type is easier to remove for cleaning and repairing.

Ask for new catalog on MURCO Screen Plate Hold Down Device.

D. J. MURRAY MANUFACTURING CO.

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moistureproof, flameproof, etc. This of course entails special coating mediums to give the specific characteristics desired.

The process equipment consists of a combination rubber roller coloring unit of the familiar aniline press design followed by a rotogravure unit with a doctor blade attachment. A drying drum, the unwinders, and rewinders usually needed for rolls are also necessary. The aniline coloring unit and the rotogravure unit are combined in one frame followed by the drying unit as a separate unit in line. This is a combination of older arts and practices, but there are some new devices and techniques, which to mention a few, are: (a) the use of rubber doctor blades to replace, when desired, the harsher steel doctor blades, (b) the flooding of the nip for prestaining, (c) the use of a preaniline allover coloring unit to brighten the stock or fill up the irregularities or even lay down a background coat, after which an allover design or distinctive pattern is laid down by a pad roll or etched rotogravure roll.

Instead of by festooning, the drying is done by wrapping the paper around a steel drying drum. According to size of the drum, the temperature inside of the drum and the weight of the paper operations are thereby permitted at speeds of 50 to 200 feet per minute, or even much higher. The cost of a complete machine for heavier board, e.g., 0.016 or 0.030 point kraft, with widths up to 78 inches wide, to handle rolls of 3000 pounds at speeds of 50 to 200 feet per minute, was, in prewar time, about $8,000 to $12,000. These are very heavy and durable machines with motors, unwinders, printing and coloring units, dryers, and rewinders. The same equipment for lighter papers cost only $5,000 to $7,500.

The color solutions come in all familiar colors together with blacks, whites, extenders, and varnishes. All are easily blended with each other or may be used as straight colors. These color solutions offer no problem as they come in the consistency of "heavy cream" and are ready to run. The mixing, thinning where desired, blending to form other colors, cutting down to get tints, or changing the body for other purposes is so simple that anyone can learn to do it with little instruction.

The color solutions come in both dye solutions which are not permanent to light, or in pigment color solutions that are permanent to sunlight, and are as opaque or as transparent as oil inks or paints of the same pigments. There is no toxic effect nor fire hazard.

The washing-up is a matter of 5 to 15 minutes at the most and color changes may be made with equal facility.

The color solutions are sold in kits or large drums and the costs differ with intensity of color, the kind of pigment used, or the size of package purchased.

Where it is desirable to lay down a background tone prior to the design, it is usually a very much diluted color solution which costs about 50 cents to $1.00 a gallon. Then, as the design uses very little coverage of the strong color, a monogram or distinctive pattern design does not cost much more than the solid coloring, since the entire operation is done once through the machine. In fact, it often costs much less and is expected to cause a demand for color and for special finishes where these did not exist before. Also coloring need not be confined to any one paper or board field but, with refinements, will eventually be extended into the better wrapping paper field.

Paper for Plastics

WALTER G. HENDRICH

Director of Research, Byron Weston Co.

In producing a paper for the plastic industry, it is well to determine which particular resin is to be used, the percentage of filler in the final product, the viscosity during the impregnation, and the equipment to produce a fibrous web which will fill the conversion requirements of the impregnation laminator, as well as the final specifications. After all this basic information is obtained from the manufacturer, the papermaker can start to work on the selection of fibrous raw materials. Here a broad field of textile waste in the form of rags, threads, or raw cotton is available. In some cases, old rags can be used where strength does not play an important part. Information has been given by the wood technologists and cotton research chemists concerning individual fibers of 60,000 psi. tensile strength, which sounds encouraging to any plastic laminator, but which places

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It is tradition with the company to constantly seek new developments in design, speed, ease and economy of operation.

Our home office personnel is so organized as to promptly and efficiently take care of any inquiries and engineering problems you may have.

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Replacements, or repairs to your machines, can be furnished under required priority rating.

"Undercut" Trimmers
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Stuff Pumps — Jordans

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a great burden on the papermaker to take these fibers and form a sheet of paper with such a strength factor. The papermaker is very likely to be discouraged when this filler produced on the paper machine results in a paper with 5,000 to 15,000 pounds tensile strength and finds himself searching for relations between paper strength factors and the finished product.

In making rag fiber paper, it is well to start with the rag cooking of the material which may be cooked for cleanliness and color in preparation for a decorative type of filler in one case, and in another instance to prepare a fiber which requires a high viscosity, alpha-cellulose and low copper number with cleanliness and color secondary. In some cases cooking may not even be advisable dependent on the type of fibrous material chosen or only plain fermentation of rag as used in early blotting paper manufacture. In most cases, however, cooking with caustic soda may be the most convenient method for the papermaker followed by a hot wash of the rag in the rag boiler.

Warm or cold washing methods in the washer, as well as washing under various hardness and *p*H conditions of the washing water have, without doubt, some effect on the quality halfstock produced in regard to softness and absorbency, but much more important appears to be the degree of beating in the washer.

Bleaching in most cases is advisable in cotton fiber preparation, especially when colored rags have been used, followed by a good washing to free the fiber of small oxidized particles which may impair the softness and absorbency of the final filler web. It is well to prepare a halfstock of a low ash.

The beating time of stock depends greatly on the type of tackle and can vary between 2 and 8 hours. In thin sheets (below 2 and 3 mils) excessive hydration of fiber is not as critical as it is in thicker fillers where a higher density may result from too much hydration. The addition of pigments, some resins like melamine and mucilage for better adhesive and fiber felting have to be taken into consideration. This again depends on the individual requirements of the laminating.

Paper machine crews should be supplied with proper specifications as to weight, caliper, porosity, apparent density, formation, tensile strength, stretch, tear, absorption, bursting strength, and wet strength. The uniformity of the filler across the machine as well as with the grain is of greatest importance to the impregnator and laminator.

In some applications where appearance, cleanliness, color, and opacity are important, or where pigments are used, the choice of a pigment which will not be affected by the resin impregnation and cure, must be made. In another case where strength characteristics are wanted, length of fiber, formation, freeness of stock, pressing, and drying should be taken into consideration. In cases where electrical properties are

(Concluded on page 1516)

We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.

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Designers and Builders of

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Laminating Equipment

Embossing Units (brick siding, etc.)

Coating Machinery

Looping, Drying, and Cooling Systems

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Shingle Cutting Machines

We also manufacture cutting cylinders, anvil rolls, squeeze rolls. We make a specially constructed steam jacketed 2" and 3" pump for handling viscous materials, such as filled asphalt, heavy lubricating oils, vegetable oils, paints, etc.

More inside information on POWELL VALVES

This small size 200-pound "White Star" Bronze Gate Valve looks very much like the same type of valve in other makes. But back of it—back of every Powell Valve—is nearly a century of specializing in the manufacture of Dependable valves for Industry.

The result of this Powell "know how" is a line of valves ruggedly built to give long, uninterrupted service and require minimum maintenance. These are reasons why Powell Valves are the choice of leading industrial plants throughout the nation.

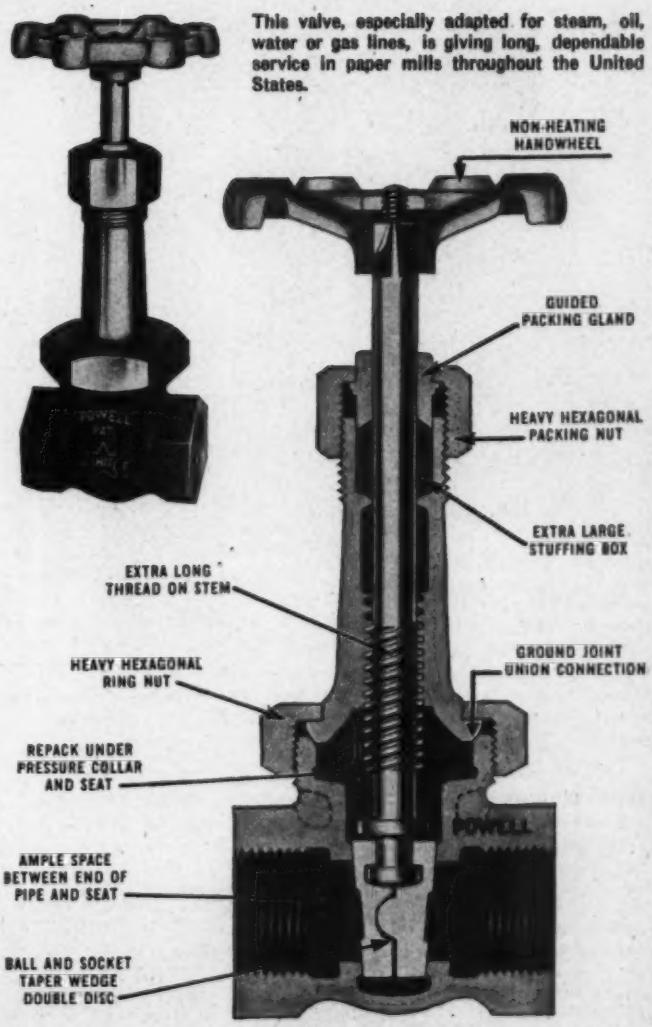
The complete Powell Line includes all types of valves (Globes, Angles, Gates, Checks, Y's, etc.) not only in bronze, iron and steel but also in a wide variety of pure metals and special alloys to meet every requirement for corrosion resistance (Catalogs on request).

And if you have any unusual flow control problems, Powell Engineers will be glad to make a careful study of your requirements and design special valves to meet the conditions.

The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati 22, Ohio


NON-HEATING HANDWHEEL
GUIDED PACKING GLAND
HEAVY HEXAGONAL PACKING NUT
EXTRA LARGE STUFFING BOX
EXTRA LONG THREAD ON STEM
GROUND JOINT UNION CONNECTION
HEAVY HEXAGONAL RING NUT
REPACK UNDER PRESSURE COLLAR AND SEAT
AMPLE SPACE BETWEEN END OF PIPE AND SEAT
BALL AND SOCKET TAPER WEDGE DOUBLE DISC
POWELL

This valve, especially adapted for steam, oil, water or gas lines, is giving long, dependable service in paper mills throughout the United States.

Fig. 375
BRONZE "WHITE STAR" GATE VALVE

POWELL VALVES

NEW EQUIPMENT AND SUPPLIES

Fluid Strainer with Vertical Screen

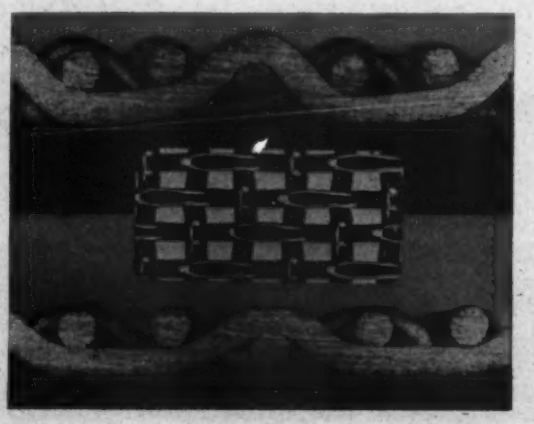
The *Rotospray* has been announced by B. F. Drakenfeld & Co., Inc., Sales Agents, 45-47 Park Place, New York 7, N. Y., for the wet screening of paper coatings and other products carrying material in suspension. It is a portable unit that features a vertical screen. In operation, fluid

is fed into a funnel, where it is directed to contact a rapidly revolving disc. Centrifugal action converts the fluid into a fine spray and propels it through the vertical screen. Coarse material, interrupted by the screen, flows downward to a residue tank at the bottom from where it can be removed. Depending upon the mesh screen employed, the machine can strain up to 2500 gallons per hour.

Twill Weave Wire Cloth

The Lindsay Wire Weaving Company, 14025 Aspinwall Ave., Cleveland 10, Ohio, has announced a new development in its *Longcrimp* wire. Two features cited by the manufacturer for the new weave are: lies flat so that entire length contacts surface of suction box, thereby giving longer wear; and top of cloth or knuckles on same level, thus imprinting or marking the sheet less.

The upper portion of the accompanying illustration shows cross-section view of original Longcrimp; the lower, the new Longcrimp. Note the curve in the crimp of the original weave; and the flat surface in the new.

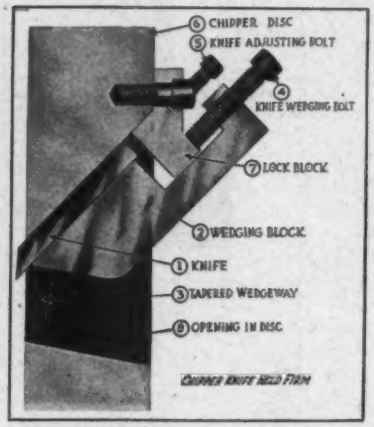


A Concrete Floor Dust Preventative

Synthex Products Co., 2 West 45th St., New York 19, N. Y., has announced *Synkrete Concentrate* for use in treating concrete floors to prevent dusting. The product, diluted with three parts of water before using, is applied by mop, brush, broom, or sprinkler. According to the manufacturer, the liquid is almost colorless, does not affect appearance of floors, and acts as sizing for floors to be painted later.

Chipper Knife Holder

D. J. Murray Manufacturing Company, Wausau, Wis., has announced a holding device for speeding up the changing of chipper knives. The wedging action of a lock block in a tapered wedgeway holds a knife tightly against the beveled machine surface in the disc. To remove a knife, the knife wedging bolt is backed off, and

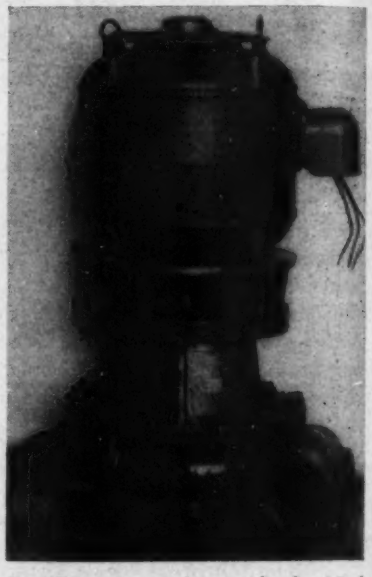


the wedging block tapped and slid into the tapered wedgeway. These operations relieve the pressure on the knife and thus permits its removal from the slot.

Knives for use with this device have no slots or holes. Likewise, no nuts or bolts are removed in either installing or removing them.

Vertical Close-Coupled Slurry Pump

Morris Machine Works, Baldwinsville, N. Y., has announced a vertical close-coupled slurry pump which is made in sizes from 1½ in. to 6 in. In this design, the impeller, mounted on extended motor shaft, is of pressure-balance design. The entire unit contains only two bearings; they are located in the motor. Pump parts,



depending upon service, can be furnished in a large variety of commercial alloys.

For handling neutral mixture or mild caustic liquors, the motor shaft is protected by means of a heavy shaft sleeve through the stuffing box. For acid mixtures, the impeller is threaded directly to the shaft and the shaft sleeve is cast integral with the impeller.

The design is adaptable to pumps with motors up to 50 hp. Advantages for the pump include: less floor space than horizontal unit and ease of dismantling.

Compressed Air Purifier

A purifier designed to eliminate free moisture, oil and all foreign matter with a heavier specific gravity than air from passing through a compressed air line has been developed by the Bird-White Co., 3120 West Lake St., Chicago 24, Ill. Known as the *Model A-1 Pur-O-fier*, this unit uses centrifugal action as the means for purification. It operates with from one to five cubic feet of air.

The unit weighs 1¼ lb.; is 3⅛ in. in diameter by 5 9/16 in. deep including plastic and transparent entrainment sump; and is ball-bearing equipped. The sump is drained by opening a petcock in the bottom. All parts subject to corrosion are plated.

Standard units have ⅛ in. female pipe connections for intake and discharg pipes.

The unit is suggested by the manufac-

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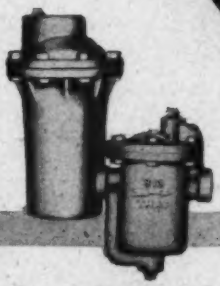
ARMSTRONG TRAPS ELIMINATE *Faulty Drying!*



Features of Armstrong Traps

1. Condensate discharged as fast as it accumulates.
2. Automatic air elimination.
3. Long life parts — chrome steel valve and seat, hardened, ground and lapped. 18-8 stainless bucket assembly.
4. Low maintenance.
5. Choice of body styles: with side-inlet and side-outlet pipe connections, or bottom-inlet top-outlet.
6. Traps for paper machines specially designed for that service. NOT the same traps used for other purposes.

EFFICIENT DRYING is one of the most important considerations in the production of paper and efficient dryer drainage is one of the most important considerations in efficient drying. To secure maximum production plus *uniformity* of drying, dryer temperatures must be maximum and uniform throughout the machine. If dryer temperatures in the main drying section are appreciably below maximum steam temperature, faulty drainage is indicated. For example, if steam pressure is 10 psi., temperature inside the dryer should be approximately 240° F. Lower temperatures indicate the presence of condensate and air.

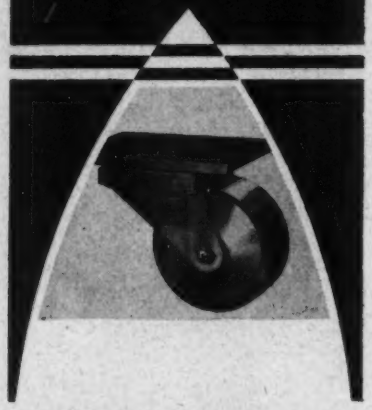
Armstrong Inverted Bucket Traps built especially for dryer drainage automatically discharge both air and condensate as fast as it accumulates, assuring you of maximum dryer temperatures.

For complete information, write today. For an educational discussion of the subject, ask for "OBSERVATIONS ON DRYER DRAINAGE" by Paul L. Ulrich.

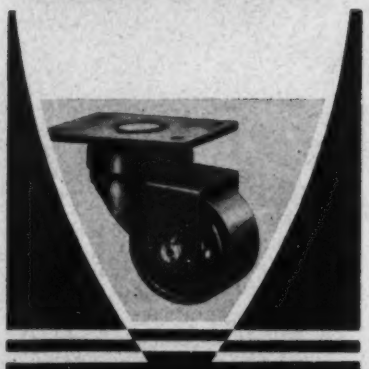
ARMSTRONG MACHINE WORKS
816 Hoffman St., Three Rivers, Michigan

ARMSTRONG *Inverted Bucket* STEAM TRAPS

A SAVING AT EVERY TURN



DARNELL CASTERS



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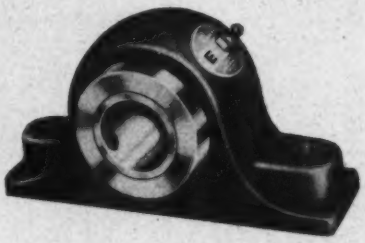
turer for the following applications: air-operated heating controls, air-operated gauges of the precision and checking type, and air-operated cleaning devices on machine tools to protect them from corrosion, gumming due to moisture, or oil and dirt contamination.

New Design of Bearing

Dodge Manufacturing Corporation, Mishawaka, Indiana, has announced a new design of Dodge-Timken bearing. Designated as *"Type E,"* this bearing is available in both pillow blocks and flanged units. Among the features of the design are the following:

On each end of the extended inner race is a steel collar having two headless set



screws spaced 120 deg. apart and extending through clearance holes in the inner race to the shaft. These four set screws provide a lock to prevent rotation of the inner race on the shaft.

Housings are compact and rugged and are machined to close tolerances.

Labyrinth seals prevent loss of lubricant and protect bearings against damage from dust, dirt, or moisture.

The bearings are completely assembled, lubricated and adjusted at the factory. While not fully self-aligning, these bearings have enough self-alignment in them to compensate for any normal misalignment.

Nonslip Floor Brick

A nonslip floor brick, designated as Empire Emri Tread, has been announced by the Empire Emery Corporation, 18 East 41st Street, New York 17, N. Y. From the safety standpoint, this brick, according to the manufacturer, is a great advance over the smooth type.

RODNEY HUNT
ROLLS
STRONGER
LONGER LIFE

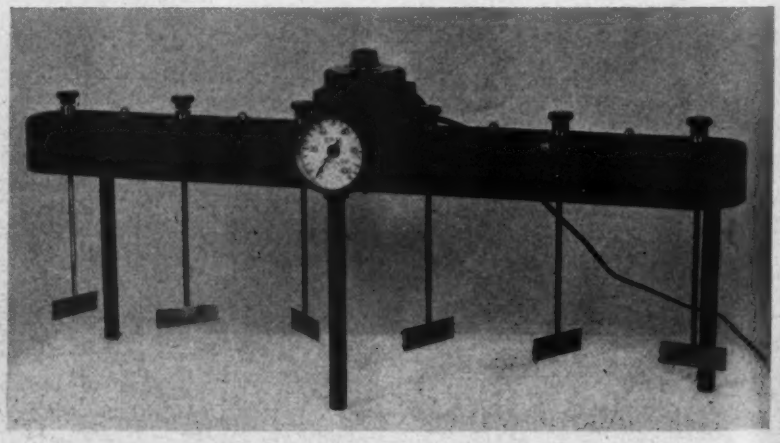
PATENTED
"SHAF-TITE"
CONSTRUCTION
RODNEY HUNT
MACHINE COMPANY
36 Maple Street, Orange, Mass., U.S.A.

Multiple Mixer

A 6-unit stirrer, designated as the *P & B Laboratory Mixer*, has been announced by Burrell Technical Supply Co., 1936-42 Fifth Avenue, Pittsburgh 19, Pa. The entire battery or any part of it can be used at one time. Individual 3 x 1 in. stainless steel paddles can be lifted out of the beakers or jars, while the mixer is running without disturbing other units.

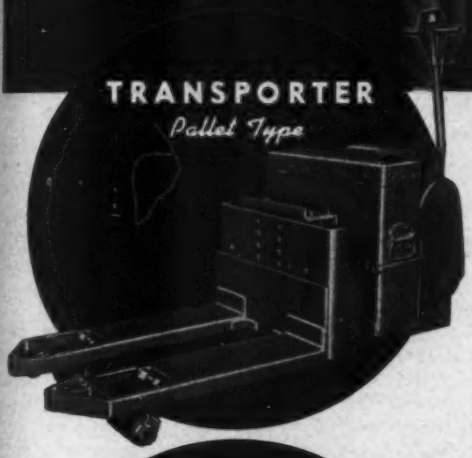
The mixer is equipped with tachometer, 1/80th hp. motor, and speed rheostat for 115 volts a-c. or d-c. Speeds from 10 to 100 rpm are standard.

The mixer takes 1000 ml. beakers.

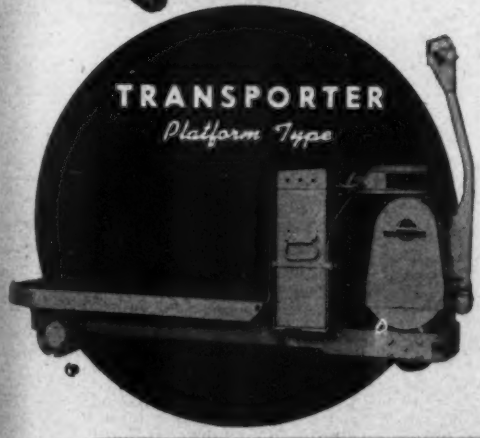


TRANSPORTER
WITH
Finger Tip Control
☆

Tons
TRANSPORTED BY SIMPLY GUIDING THE LOAD



★ Model "P-427" 4000 Pound Capacity Pallet Type "TRANSPORTER" Fork Lift Truck. Standard Established Fork Lengths are minimum 30" to 60" maximum in 2" steps. Standard Fork Height in low position is 3⅛". Lifting Height from low to high position is 3¾".



★ Model "TN-4 and TW-4" 4000 Pound Capacity and Model "TN-6 and TW-6" 6000 Pound Capacity "TRANSPORTER" Platform Type Lift Trucks for Skid Platforms. Standard Platform Lengths 36" to 72" in 12" steps. Width 20" and 26½" —heights in low position 6", 7", 9", 11".

The TRANSPORTER makes easy work of handling bulk materials and packaged goods.

Women transport tons with no trouble at all—in fact inexperienced help becomes efficient with a TRANSPORTER. This battery powered equipment not only offers you an immediate answer to manpower shortage but does a remarkable job of speeding up the work and cutting handling costs.

The trucker simply guides the TRANSPORTER and walks along with the load. Forward or reverse movement—complete brake and speed control at operator's finger tip. Wide turning range —maneuverability in close quarters. Write for complete details.

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Division of the Yale & Towne Manufacturing Company

TECHNICAL DEVELOPMENTS

These abstracts are of the latest developments found in the American and foreign press.

Cellulosic Raw Materials from India

The chief object was to determine the alpha-cellulose content of various Indian raw materials under optimum conditions. In the case of wood samples, four pulping processes were used: soda, sulphate, sulphite, and sodium sulphite alone, the latter giving the best results. When sodium aluminate was added, the alpha-cellulose content increased but so did the ash content. Various other raw materials were also pulped. These included bamboo (*Dendrocalamus strictus*), thorny bamboo (*Bambusa arundinacea*), Kamti and eetta bamboos, reeds, salai wood (*Boswellia serratta*), karai wood (*Sterculia urens*), fir, spruce, cotton and maize stalks, castor stalks, linseed, rice and wheat straws, sunn hemp stalks, coconut husks, kazi grass, bagasse, ramtha bark, aloe leaves, hemp, jute and cotton. The salai and karai wood were unsatisfactory. The stalks of bamboo were best, with cotton and castor and sunn hemp stalks next best. Wheat straw gave better results than did linseed and rice straws, and the pulp contained about the same amount of alpha-cellulose as did bagasse and kazi grass. Ramtha bark gave poor yields. The authors point out that these must be considered orienting experiments, carried out with simple equipment and the results were only proximate. Nazir Ahmad and M. G. Karnik, J. Sci. Ind. Research, 2, 275-90 (1944), C. A. 39, 184 (1945).

Color Measurements in Control and Research

In papermaking the Blancometer has shown its usefulness, and an outline is given of improvements during the past decade and also in the extended use of the instrument. The differences between the trichomatic effects and brightness figures given by the Blancometer on the one hand and by the recording spectrophotometer on the other, for a series of paper samples, have been tabulated, and for "A light" these are not very great. The authors also give changes in color on storage for various samples. S. R. H. Edge and Helen M. McKenzie. Papermaker and British Paper Trade J. 106, 21, 55-6 and 59 (1943).

Amino Resins

The author reviews the composition and the development of amino plastic resins in molding powders, adhesives, resins for varnishes and enamels, and also for their use in the textile and paper industries. Urea-formaldehyde and melamine-formaldehyde resins are used in the making of paper of improved wet strength. There are three methods of application: tubsize, spray, and beater size. The two former methods offer the advantage of more complete retention but special equipment is required. Beater size application has the advantage of giving a homogeneous product without special machinery and permits the full use of the dryers of the paper machine. However a part of the water soluble resin is lost in the backwater. Better results are obtained when small amounts of melamine resin are added to the beater. Hereupon the wet strength is increased to about 60% of the dry strength and the wet "rub-resistance" is also greatly increased. The dry strength and folding endurance increase as well. The claim is also made that high wet strength is attained by roller or spray application of ½ to 5% melamine-formaldehyde and a suitable accelerator, provided the drying is first carried out at 100 degrees and then at 135 degrees. (Brit. Patent 540673). Fourty-three references are given, most of them recent. J. Hofton, Chem. Ind., Dec. 2, 1944, 410-2.

Lignin in road Construction

Quebec Department of Roads has made experiments on the use of lignin extracts as stabilizers in road construction with promising results, as reported by the Department of Commerce. The lignin extract in powdered form is mixed with gravel and clay, and the mixture is spread in layers and then consolidated by means of rollers. The lignin increases the binding power of the clay, and makes for a stabilized mat. In order to render this impervious and to provide a good wearing surface, this mat must be covered with tar or asphalt, but the lignin permits the use of less gravel, and less asphalt is also required. Anon., Chem. and Eng. News, 23, 83 (1945).

Gas Transmission by Volumetric Measurement

The author describes fully and furnishes illustrations for a simple apparatus for measuring gas transmission through plastic packaging materials. Its operation depends upon the fact that a chamber on one side of the sheet is evacuated while a chamber on the other side is kept at atmospheric pressure. The differential in gas pressure between the two chambers results in a movement of gas through the sheet and consequently a column of liquid (in a horizontal capillary tube) thus moves to displace the volume of the transmitted gas, which can thus be measured directly. Details of the equipment are given together with tabulated data showing the effect of temperature, humidity, and sheet thickness on air transmission through ethyl cellulose and the air and carbon dioxide transmission rates and the specific permeabilities of various plastic sheets at 98 Fahr. Although designed primarily for gasproof plastics, the method could probably be adapted to the more porous papers by reducing the pressure differences on either side of the sheet. H. R. Todd, Modern Packaging 18, No. 4, 124 (Dec., 1944).

Bamboo in Papermaking

The growing habits of the plant and the uses of bamboo are discussed briefly. Reference is made to pulping experiments at the Herty Laboratories in Savannah, Ga., with green and seasoned bamboo. These indicated that the green material could not be pulped economically, but the seasoned product lent itself to sulphate pulping. Sulphite digestion could not be used. Although bamboo chips yield less pulp than pine, the pack better in the digesters and the actual yield per digester measures up to that obtained with pine. The bamboo kraft is of good quality and holds possibilities for large-scale manufacture. Pearl Emerson, American Forests, 50, No. 12, 599-601 (1944).

Use of Infrared Heating in Packaging

Drying and heating by infrared rays are being resorted to in treatment of coatings on paper and metal, in the setting of glues, in drying printing inks, in dehydrating adhesives and in preheating before carrying out subsequent operations (e. g. in eliminating mildew by drying the product as well as the container before packaging). The article gives two diagrams showing infrared lamp installations: one shows the drying of a wax coating on a K-ration and the other shows the type used in the dehydration of a glue coating before the lamination of two sheets. Before the second type of lamp was installed, the moisture in the glue became entrapped between sheets causing buckling and wrinkles. Paul H. Krupp. Modern Packaging 18, No. 3, 134-6 (1944); through B. I. P. C. December, 1944.

New Cellulose Determination

The method for determining cellulose in plant materials is based on the bromination of lignin and its removal. A mixture of bromide and bromate is acidified and bromine is liberated. Bromination may also be effected under alkaline conditions by adding sufficient alkali to the acidified mixture. The reactions are analogous to those found in the hypochlorite methods (like the Norman-Jenkins technique), and the results are also very similar. The bromine method would have an advantage in the tropics, where hypochlorite is difficult to obtain and to store. However, because bromine is less active than chlorine, one or two more treatments are usually required than in the case of the hypochlorite technique. This is actually an advantage when young plant material is to be analyzed for cellulose, inasmuch as the bromine is less likely to injure young tissues. J. G. Shrikhande. Biochem. . 38, No. 3, 207-9 (1944).

fully *EXPOSED* to the weather... yet fully *PROTECTED* from the weather!

HOMASOTE INSULATION BOARD is thoroughly waterproofed — needs no further protection.

Prolonged exposure to the elements has no deteriorating effect on the high grade insulation board of The Homasote Company of Trenton, N. J., because every foot of it is thoroughly weatherproofed during manufacture. The Homasote Company is a satisfied user of Nopco Wax Size.

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PAPERMAKING PATENTS

IN THE UNITED STATES—Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington 4, D. C.

Manufacture of Corrugated Paperboard and the Like

Patent No. 2,347,419. James G. Lander, Cincinnati, Ohio, assignor to Diamond Alkali Company, Pittsburgh, Pa., a corporation of Delaware. No Drawing. Application December 5, 1941, Serial No. 421,847. 2 Claims. (Cl. 106—75).

1. A silicate composition adapted to be used in the manufacture of corrugated paperboard and the like, which composition comprises a liquid adhesive silicate having incorporated therein a small percentage of aromatic mono sodium sulphonate derived from petroleum oil which is capable when heated to a relatively high temperature of causing the silicate mass to dry in the form of a friable, porous condition, but which composition is capable of drying at room temperature to a film of unimpaired adhesive strength.

Paper Pulp Preparation

Patent No. 2,342,225. Auxilius P. Schnyder, Teaneck, N. J. Application December 30, 1941, Serial No. 424,848. 18 Claims. (Cl. 92—7).

4. A blow tank installation adapted for making pulp, comprising in combination, a tank for receiving thick stock, a false-bottom in said tank forming a support for storing thick stock in an upper chamber with a funnel-shaped outlet downward and forming with said tank a compartment below and around said outlet for storing dilute stock, means for supplying diluting liquid to the thick stock near said outlet, and means for mixing stock at said outlet and circulating the dilute stock in said compartment within and across the end of said outlet.

Method of Making Sized Paper Products

Patent No. 2,337,458. Earle R. Edson, Gloucester, and Charles Quincy Ives, Reading, Mass., assignors to Le Page's Inc., Gloucester, Mass., a corporation of Massachusetts. No Drawing. Original application March 13, 1939, Serial No. 261,666. Divided and this application August 5, 1939, Serial No. 288,638. 1 Claim. (Cl. 92—21).

In a method of making starch-sized paper, those steps which comprise adding papermaking stock to a beater engine together with sufficient water to enable circulation; also adding to the engine a substantially dry, pulverulent, paper sizing composition comprising rosin size compounded with an acidic, starch conversion product while said composition is enclosed as a relatively small unit weight within a bag, and subjecting the resulting beater contents to beating action, in the course of which said bag is drawn into the zone of beater action, whereat said bag is disintegrated to effect a dispersion of said pulverulent material under water throughout said stock, and continuing beating said stock, composition and bag until a substantially physically homogeneous mixture of papermaking consistency is developed.

Fabrication of Wet-Strengthened Papers

Patent No. 2,338,602. Milton O. Schur, Berlin, N. H., assignor, by mesne assignments, to Reconstruction Finance Corporation, Washington, D. C., a corporation of the United States of America. Application December 4, 1939, Serial No. 307,425. 12 Claims. (Cl. 92—21).

1. The process of making paper which comprises reacting urea and formaldehyde in aqueous solution; carrying the reaction to the stage where the viscosity of said solution has risen sharply and is in the course of mounting rapidly but has not reached the gel stage; incorporating said solution with a paper furnish prior to the formation of a web therefrom, and forming paper from said furnish under acid conditions.

Strainer for Pulp Digesters

Patent No. 2,340,925. Cheney K. Boyer, Appleton, Wis., assignor to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., a corporation of Wisconsin. Application May 25, 1940, Serial No. 337,174. 5 Claims. (Cl. 92—7).

2. Chemical pulp digesting apparatus, comprising: a substantially cylindrical digester; a pair of arcuate channel members secured in vertically spaced relation upon the inner wall of said digester with the backs of said channel members opposing each other; a perforated, plain, arcuate strainer plate bridging said channel members at their innermost flanged surfaces to provide a substantially concentric space between the inner wall of the digester and said plate; and clamping means frictionally holding said strainer plate in position relative to the inner flange of said channel members to thereby permit movement of said plate with respect to said channel members, said digester being provided with an outlet opening communicating with said space, whereby fluid from said digester passing through the perforations in said plate may be discharged through said outlet opening.

Spray Device for Moistening Coated Paper

Patent No. 2,342,536. Chester A. Garrison, Comstock, Mich. Application December 26, 1941, Serial No. 424,462. 3 Claims. (Cl. 91—12).

1. In combination with a machine for applying coating to a paper web on one side thereof and for advancing and discharging the web, a pair of spraying devices supported adjacent the discharge end of said machine on the uncoated side of the web at either edge thereof, said devices each comprising a liquid containing tank provided with a plurality of atomizing spray nozzles arranged in a group to direct a spray against the adjacent edge of the web, the inner end of said nozzles opening to the interior of the tank, float valve controlled means for supplying liquid to said tank, means for supplying air under pressure to said tank to build up a predetermined pneumatic pressure on the liquid therein, said nozzles being internally exposed to said pneumatic tank pressure whereby air issues therefrom and having eduction tubes associated therewith which are in communication with the liquid beneath the surface thereof whereby liquid is forced under pneumatic and hydrostatic head through the tubes and nozzles and is atomized by the air issuing therefrom.

Sheave Device for Draping Fourdrinier Wire

Patent No. 2,340,269. John A. Hoover, North Charleston, S. C., assignor to West Virginia Pulp and Paper Company, New York, N. Y., a corporation of Delaware. Application May 30, 1942, Serial No. 445,236. 1 Claim. (Cl. 242—85).

A pulley or sheave device for facilitating change of wire on a Fourdrinier machine, comprising a sheave proper adapted to receive a supporting cable, a device attached thereto for manually rotating the sheave, and a housing concentric with said sheave accommodating the ends of a pair of superimposed poles upon which the wire is reeled, and means for securing said pole ends within said housing.

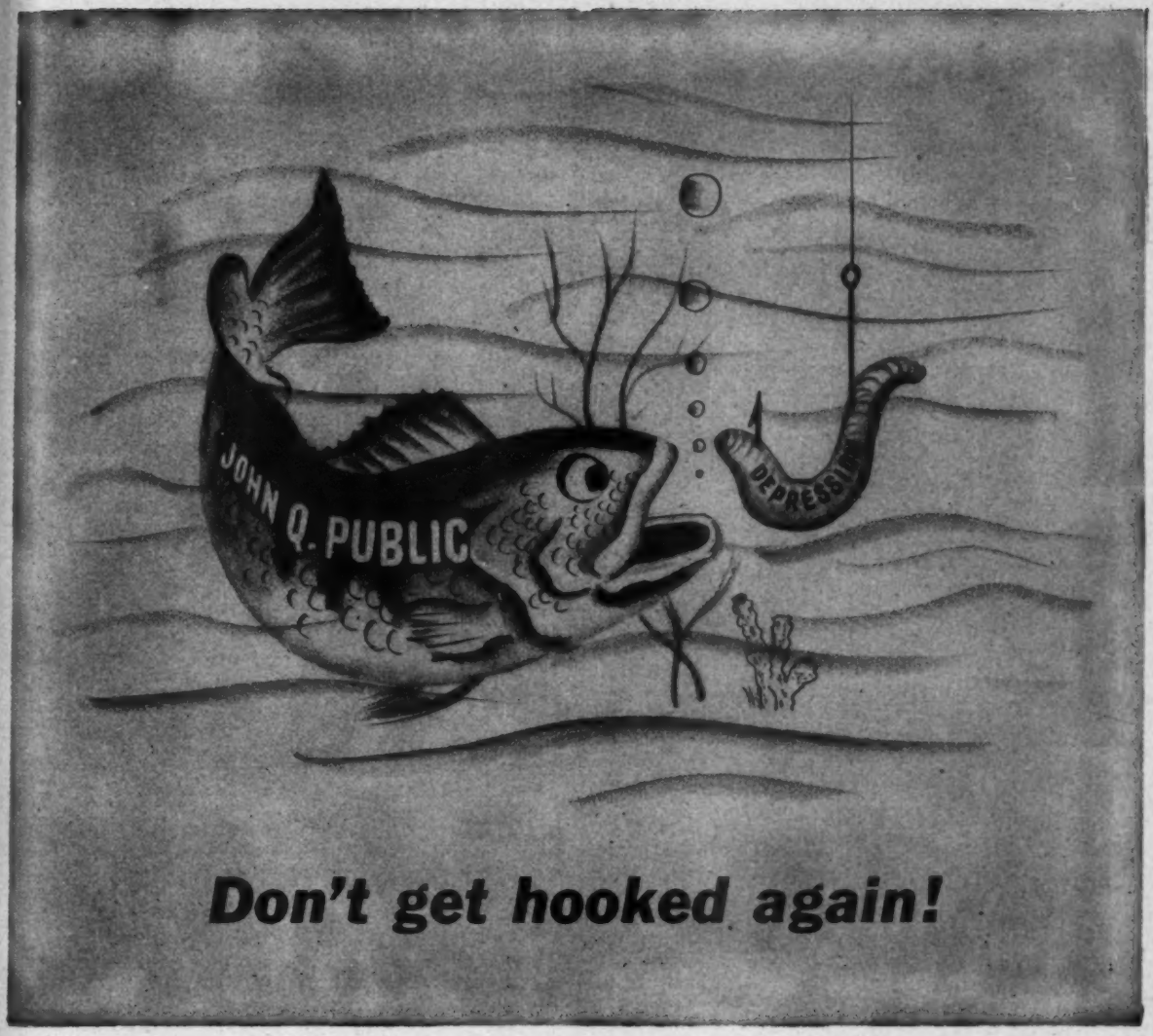
Paper for Plastics

(Continued from page 1508)

required, the absence of chlorides and any metals, high alpha-cellulose, low copper number and neutral *p*H are essential in the final filler.

Dry and wet strength as well as tensile strength have to be taken into account in bag molding or contour work. It seems very reasonable that after considerably more work has been done in the paper industry, kraft and sulphite papers will be used where higher tensile strength requirements prevail and cotton paper where higher impacts, lower water absorption, good electrical properties, and machineability are wanted.

The more intimate acquaintance of the paper technologist with the plastic chemist furthered by discussion should bring about new possibilities in papermaking as well as in the plastic field. The ultimate in cotton fiber filler, as in sulphite and kraft, has not been reached in regard to strength and appearance and many phases in papermaking, e.g., length of fiber versus formation versus density versus impregnation and low or high pressure lamination versus final product test, must be clarified in present research.



Don't get hooked again!

Only yesterday (YOU remember!) men sold apples on the streets, saw their furniture go back to the store, lost their houses, lost their farms. Will it happen again? It needn't.

But to avoid the kind of depression we had after the last war—WE MUST HEAD OFF INFLATION NOW! And the best way to do that is to save your money.

When you don't buy a thing you can get along without . . . *that's helping to prevent inflation.* When you decide this is a bad time to ask more money for the things you sell or to fight for a raise . . . *that's helping to prevent inflation.* When you pay up all your debts . . . *that's helping prevent inflation.* AND SOMETHING MORE!

It's the best way to protect yourself against a depression if one should occur, *and* the best way to prepare yourself for tomorrow's opportunities if times are good.

The smart thing today is to save, not splurge. Don't get hooked again!

4 THINGS TO DO to keep prices down and help avoid another depression

1. Buy only what you really need.
2. When you buy, pay no more than ceiling prices. Pay your ration points in full.
3. Keep your *own* prices down. Don't take advantage of war conditions to ask more for your labor, your services, or the goods you sell.
4. *Save.* Buy and hold all the War Bonds you can afford—to help pay for the war and insure your future. Keep up your insurance.

HELP US KEEP PRICES DOWN

A United States War message prepared by the War Advertising Council, approved by the Office of War Information, and contributed by this magazine in cooperation with the Magazine Publishers of America.

New Catalogues and Publications

Allis-Chalmers Manufacturing Company, Milwaukee 1, Wis.—Just released by this company is an unusually complete V-belt drive catalogue which contains in handy charts, tables and drawings, all the information necessary to make correct drive selections. The catalogue contains a quick-picture story of the newest V-belt drive products of this company, the "Magic-Grip" sheave. One section covers the Texrope "Econograph" method of drive selections. List prices, stock sizes, dimensions and construction details are included for all Texrope drives. Additional descriptions cover the application of Texrope Vari-pitch sheaves and drives, and the Vari-pitch speed-changer. Ask for Catalogue No. B6051E.

B/W Controller Corporation, Birmingham, Mich.—Just off the press is Catalogue 145 describing B/W Floatless Liquid Level Controls and Industrial Motor Controllers which contains new data; pictures of special control panels; application diagrams, and other items of interest.

Belden Brick Company, Canton, Ohio. —This company announces a 16-page illustrated brochure which describes a new permanent acidproof brick floor, which is designed for all branches of industry. Complete instructions for installations with a special acidproof cement are given. Technical analyses made by three testing laboratories are reproduced in the booklet.

Blackmer Pump Company, Grand Rapids 9, Mich.—Bulletin 306, "Facts About Rotary Pumps" is a revision of Bulletin 304, of the same title. It is illustrated with photos and diagrams. One of the latter shows the operating cycle of a Blackmer pump, and explains graphically what happens inside the pump. The new relief valve is shown in the same manner.

Bump Pump Company, La Crosse, Wis.—Obtainable from this company is a new 104-page catalogue describing the Bump pump principle of operation, and the range of sizes in both industrial and sanitary pumps. It is well illustrated with halftone reproductions of pumps. The booklet contains operating and construction features, which are emphasized with cutaway views; dimension and installation diagrams; horsepower charts; equivalent and friction loss tables. It also contains recommendations of materials for pumping various liquids, together with typical installations, as well as lists of products and the recommended pumps for such products.

Chemical Publishing Company, Inc., 26 Court St., Dept. C, Brooklyn 2, N. Y. —The 1944-1945 Catalogue just gotten out by this company includes in addition to concise descriptions of its books, a list of books in preparation, an index of subjects and an index of authors.

Chicago Fire Brick Company, 1419-1467 North Elston Ave., Chicago 22, Ill.—Just issued by this company is Bulletin 1244, describing their Automatic Ash Disposal System. Diagrams showing installations are included.

Clayton Manufacturing Company, Valve Division, Alhambra, Calif.—An attractive new circular on Clayton Liquid Valve is now available. It describes the complete line of Float Valves for direct or remote control, together with a few of the many application suggestions.

Hercules Powder Company, Wilmington, Del.—A new booklet, "Hercules Products," lists Hercules chemicals, industrial explosives and approximately 50 industries which they serve. The products are first indexed according to the various industries in which the chemicals and explosives are used, and then according to chemical families. Indications of post-war applications for Hercules chemicals are also included. Chemicals in the cellulose family rosins and modifications; rosin esters and synthetic esters; terpene solvents and chemicals; explosives; blasting supplies and sporting powders, as well as special products, are discussed in this booklet.

Illinois Electric Porcelain Company, Macomb, Ill.—Illustrated in a booklet just prepared by this company are the uses of porcelain pipe and porcelain fittings. Photos, diagrams and specification tables are included to assist the purchaser.

Lewis-Shepard Products, Inc., 300 Walnut St., Watertown 72, Mass.—Just off the press is their new General Catalogue No. 22. Printed in three colors, it contains 76 pages and cover with a special file tab. All the installation photos are printed in duotone, a printing process which gives the third dimension to pictures of materials handling equipment shown in operation. The catalogue includes special sections on life trucks, skid platforms, power fork trucks, stacker, cranes, floormaster floor trucks, storage racks, and special equipment for unusual jobs in production, process and storage.

The Pusey and Jones Corporation, Wilmington 99, Del.— Aspecial bulletin issued by this company shows the new features of the latest installations of its machinery for the paper industry.

Geo. P. Reintjes Company, P. O. Box 856, Kansas City, Mo.—A bulletin put out by this company outlies the principles underlying their sectional supported walls, which makes them savers of fuel and manpower.

Rhode Island Laboratories, Inc., (Div. of Warwick Chemical Company), West Warwick, R. I.—Free upon request on company stationery is an interesting booklet, "Lights Out; Violite On," published by the Laboratories. It offers an extensive study for the use of luminescent pigments sold under the trade name of Violite. There are many illustrations showing how these pigments may be fitted into the postwar picture of many industries.

The Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.—By means of photos and blueprints, a broadside gotten out by this company illustrates and describes the operation of their Kamyr Grinder for the production of mechanical pulp; the Precision Sharpening Apparatus, which is a separate attachment for the Grinder, and auxiliary pulp mill equipment.

South Wabash Engineering Company, 2937 S. Wabash Ave., Chicago 16, Ill.— General information concerning the types of machinery handled by this company is given in Bulletins 101 and 109, while Bulletin 113 lists available machinery. Copies of these bulletins will be sent on request to readers in the paper industry.

Struthers-Wells Corporation, Northmaster Division, Titusville, Pa.—Copies of a new 16-page bulletin giving complete details on its kneading machines may be had by writing to this company. The booklet includes tables of standard sizes and capacities; diagrammatic illustrations of mixing chamber and blade types, as well as complete construction data and available optional features. A partial list of industrial uses and applications for these kneading machines adds to its interests.

Swenson Evaporator Division of Whiting Corporation, Harvey, Ill.—Just off the press is a new catalogue bulletin, F-104, which will be sent free on request. The Swenson-Nyman line of pulp washers is fully covered in this eight-page, two-color bulletin.

Books

Basics of Supervision—In the words of the author, H. W. Heinrich, "It is the primary purpose of this book to teach practical shop methods of controlling the performance of persons and the conditions of worker environment on the basis that such control is the very heart of supervision and deserves a more prominent place in the subject of supervisors' training texts."

The book is divided broadly into two parts: Part I, Basic Instruction; and Part II, Advanced Instruction. The chapters in Part I cover Basic Factors of Supervision, Dynamic Supervision, Reasons and Remedies for Unsafe and Improper Practices and Conditions, Methods of Applying Remedies. The subjects treated in Part II are Cause and Effect, Kinds of Unsafe or Improper Mechanical or Physical Conditions, Kinds of Unsafe or Improper Practices of Persons, Faults of Persons, and Investigation and Inquiry. Published by Alfred M. Best Company, Inc., 75 Fulton St., New York 7, N. Y., the book is priced at $3.00 a copy.

Demobilization of Wartime Economic Controls — A research study of the Committee for Economic Development, this book is the work of John Maurice Clark, Professor of Economics, Columbia University. The book opens with the setting of the problem and with a presentation of the main findings and recommendations. The rest of the volume is given over to such subjects as How Not to Reconvert; Objectives of Policy in War, in Reconversion, in Peace; The Framework of Wartime Controls; Economic Controls During Future Fighting; The Characteristics of Initial Postwar Reconversion; War Controls During Initial Postwar Reconversion; Immediate Problems of the "Catching-Up" Period; and Controls in a Longer Perspective.

In planning now for the orderly release of wartime controls after victory, the study reveals three objectives to be kept in mind, namely, early preparation and speedy clearing of the decks for resumption and expansion of civilian production; fair opportunity for every producer, particularly new ones, including access to the necessary means of production; and avoidance of cumulative depression, violent deflation or violent inflation.

The study also recommends a nationwide system of "assisted voluntary placement" as necessary to the solution of the postwar manpower problem.

Published by McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 18, New York, the book is priced at $1.75 a copy.

Dictionary of Engineering and Machine Shop Terms—Written by A. H. Sandy, Instructor and Lecturer, Mechanical Engineering Department, Borough Polytechnic, London, England, and revised by I. E. Berck, this volume presents definitions of many important terms used in machine shops, industrial plants, and technical literature. The book totals approximately 150 pages, and is the first American Edition. Published by The Chemical Publishing Co., Inc., 26 Court Street, Brooklyn, New York, this book is priced at $2.75 a copy.

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CURRENT MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

OPA ceiling prices in sales to consuming mills delivered buyer's usual receiving point, with brokers' allowance not in excess of 5 per cent.

	per cwt.
Blue Overalls	-5.50
Corduroy, Men's	-3.50
Corduroy, Ladies'	-3 00
Washables, No. 1	-3.00
Percales	-4.75
New Soft Blacks	-3.75
Light Prints, No. 1	-4.50
Khaki Cuttings—	
Bleachable	-4.25
Unbleachable	-3.50
New White Canvas	-6.50
New Mixed Blacks	-3.25
Canton Flannels, Bleached	-7.00
Shirt Cuttings—	
New White No. 1	-7.25
No. 1 White Headings	-7.25
White Shrunk	-5.00
Silesias No. 1	-5.75
New Unbleached	-7.50
Fancy	-3.50
Linen Cuttings—	
American	-5.00
White	-14.00
Grey	-14.00

RAGS (Domestic)

f. o. b. New York City

OLD RAGS

OPA ceiling prices in sales to consuming mills f. o. b. cars at points of shipment, with brokers' allowances of $1 to $2 a ton depending on the value of the grade involved.

Roofing—	per ton
No. 1	31.00
No. 2	29.00
No. 3 and No. 4	27.00
Twos and Blues—	
Repacked	44.00
Thirds and Blues—	
Repacked	44.00
Miscellaneous	36.00
Whites, No. 1—	
Repacked	76.00
Miscellaneous	64.00
Whites, No. 2—	
Repacked	58.00
Miscellaneous	53.00

RAGS (Foreign)

ex dock New York City

NEW RAGS — per cwt.

New Dark Cuttings
New Mixed Cuttings
New Light Silesias
Light Flannelettes — Nominal
Unbleached Cuttings
New White Cuttings
New Light Oxfords
New Light Prints

RAGS (Foreign)

ex dock New York City

OLD RAGS — per cwt.

No. 1 White Linens
No. 2 White Linens
No. 3 White Linens
No. 4 White Linens
No. 1 White Cottons
No. 2 White Cottons
No. 3 White Cottons
No. 4 White Cottons
Extra Light Prints
Ord. Light Prints — Nominal
Med. Light Prints
Dutch Blue Cottons
French Blue Cottons
French Blue Linens
Checks and Blues
Linsey Garments
Dark Cottons
Old Shopperies

ROPE and BAGGING

f. o. b. and ex dock New York City

Gunny No. 1—	per cwt.
Foreign	Nominal
Domestic	2.75 to 3.00
Wool Tares—	per cwt.
Light	3.00 to 3.25
Heavy	3.25 to 3.50
No. 1 Scrap Bagging	2.60 to 2.85
Manila Rope—	
No. 1 large	-*115.00
No. 1 small	-*105.00
Sisal Rope—	
No. 1 large	-*95 00
No. 1 small	-*80.00
New Burlap Cuttings	5.50 to 6.00
Jute Threads—	
Foreign (Nom.)	6.25 to 6.50
Domestic	5.50 to 5.75
Strings—	
No. 1 sisal	-*80.00
No. 2 sisal	-*60.00
Soft jute	5.00 to 5.50
Mixed	1.75 to 2.00

*OPA ceiling price per ton f. o. b. shipping point.

WASTE PAPER

OPA ceiling prices f. o. b. points of shipment for machine compressed bales weighing not less than 500 pounds (with differential of $5 per ton less on certain grades for loose or bundled stock), and brokers' allowance of 4 to 9 per cent.

Shavings—	per ton
White Env. Cuts, One-Cut	67.50-
Hard White Env. Cuts	62.50-
Hard White, No. 1	57.50-
Soft White, No. 1	50.00-
Soft White, One-Cut	57.50-
Soft White, Misc.	43.00-
Fly Leaf, No. 1	33.50-
Fly Leaf, Woody, No. 1	25.00-
No. 2 Mixed Col. Woody	18.00-
Flat Stock—	
No. 1 Heavy Books and Magazines	38.50-
Mixed Books	22.00-
Ledger Stock—	
No. 1 White	46.00-
No. 1 Mixed (Colored)	40.00-
Manilas—	
New Env. Cuttings	53.00-
New Env. Cuts, One-Cut	57.50-
Extra Manilas	39.00-
Manila Tab Cards, Free of Ground Wood	45.0'-
Ground Wood Manila Tab Cards	27.00-
Kraft—	
Envelope Cuttings	65.00-
Mixed Env. or Bag Cuts	55.00-
Tripled Sorted No. 1 Brown	50.00-
New 100% Cor. Cuts	45.00-
No. 1 Old Assorted	35.00-
News—	
White Blank	33.00-
Overissue	22.00-
No. 1 Baled	20.00-
Old Corrugated Containers	28.00-
New Corrugated Cuts	18.00-
Mill Wrappers	22.00-
Box Board Chips	14.50-
No. 1 Mixed Paper	19.00-

CHEMICALS

f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.25-
Ground, cwt.	4.00-
Powdered, cwt.	4.40-
Blanc Fixe—	
Pulp, bulk, ton	40.00 to 46.50
Dry, barrels, pound	60.00 to -
Bleaching Powder—	
Drums, cwt.	2.25 to 3.10
Casein (Domestic Standard)—	
20-30 mesh (bags), lb.	22.00 to 24.00
80-100 mesh (bags), lb.	—
Argentine, lb.	17.00 to 18.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	7.50 to 15.00
Domestic Coating	
Bulk (mine) ton	11.00 to 22.00
Imported (ship side)	
Bulk (lump) ton	14.00 to 26.00
Chlorine—	
Tank cars (wks) cwt.	2.00 to 2.25
Gelatine (silicin), lb.	.90 to .95
Glye. (C.P.) drums, lb.	18.25 to 18.75
Litharge, powd., bbl., lb.	.09 to -
Rosin (Gum)—	
New York, per 100 lbs.	
E	6.55-
F	6.65-
G	6.60-
WW	7.45-
Rosin (Wood), carlots	4.50-
Salt Cake—	
Dom. bulk (wks) ton	15.00 to 16.00
Imp. bulks on dock—	
(Atl. ports) ton (Nom.)	20.00 to
Soda Ash—	
Bulk (works), cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—	
Solid, drums, cwt.	2.30 -
Ground and flake, drums, cwt.	2.70 to 2.95
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1 65 to 2 05
40 deg., 35 gal. drums, (works) cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	3.72-
Pearl, barrels, cwt.	3.83-
Paper (Sp.) bags, cwt.	3.83-
barrels, cwt.	3 92-
Sulphur (crude)—	
(mine) bulk, long ton	16.00 to ——
Talc—	
Dom. 100 lb. bags (mine) ton	16.00 to 21.00
Imp. bulk, ton (Nom.)	—
Titanium Dioxide—	
Barium Pig., bbls., lb.	.05¾ to .06
Calcium Pig., bbls., lb.	.05 to .05¼
Zinc Sulphide, bbls., lb.	5.60 to 5.85

WOOD PULP

OPA maximum prices applicable to wood pulp delivered to consumer mills located East of the Continental Divide exclusive of Denver, Colo. (West of the Continental Divide and in Denver, Colo., ceilings are $6 per ton lower):

Bleached softwood sulphite	86.00
Unbleached softwood sulphite	74.00
Bleached hardwood sulphite	83.50
Unbleached hardwood sulphite	71.50
Northern bleached sulphate	86.00
Southern bleached sulphate	79.00
Northern semi-bleached sulphate	82.00
Southern semi-bleached sulphate	75.00
Northern unbleached sulphate	73.00
Southern unbleached sulphate	63.50
Bleached soda	76.00
Unbleached soda	72.00
Groung wood pulp	50.00
Ground wood—paper machine dried and mutilated	53.00
Sulphite screenings	43.50
Sulphate screenings	38.00
Ground wood screenings	32.00
Northern unbleached sulphate sideruns	73.00
Southern unbleached sulphate sideruns	63.50
Standard news print sideruns	50.00

PAPER

f. o. b. New York City

Boards—	per ton
Binders	84.00-
Chip	56.00-
Chip, tube and can	52.00-
Chip, full-blending	54.50-
Chip, sgl. mla. lined	62.00-
Coated, white patent .016	80.00-
.020 and heavier	75.00-
Kraft liner	63.00-
News	50.00-

Book Papers—OPA base maximum prices per cwt. 4 cases or equivalent, f. o b. mill with quantity, weight, manufacturing and other differentials allowed:

Uncoated (Untrimmed)

Book, White (M. F.)—	
A Grade E. F.	8.25
B Grade E. F.	7.80
C Grade E. F.	7.55
D Grade E. F.	7.30
E Grade E. F.	7.05
No. 2 Uncoated Offset 4 sides. White	8.45

Coated White (Trimmed 4 sides)

No. 1 Glossy	11.90
No. 2 Glossy	10.85
No. 3 Glossy	10.15
No. 4 Glossy	9.80
No. 5 Glossy	9.30
C2S Offset	10.40
C1S Litho (Varnish)	10.05
C1S Litho (Non-Varnish)	9.80

Writing Papers—OPA base maximum prices per cwt. on writing papers, f. o. b. mill with zone, quantity, packing and other differentials allowed:

Rag Content Bond—	per cwt. 20 lb	16 lb.
Extra 100% Rag	34.00	34.00
100% Rag	28.00	28.00
75% Rag	20.00	20.00
50% Rag	16.00	17.25
25% Rag	14.00	15.00

Rag Content Ledger—	per cwt. Zone 1
Extra 100% Rag	35.00
100% Rag	29.00
85% Rag	26.00
75% Rag	21.00
50% Rag	17.00
25% Rag	15.00

Sulphite Bond—	per cwt. 20 lb.	16 lb.
Air dry, watermarked	12 75	13.70
No. 1 (M. F.) watermarked	9.00	9.70
No. 2 (M. F.) watermarked	8.25	8.85
Plain (M. F.) unwatermarked	7 60	8.20

Sulphite Ledger—	per cwt. Zone 1
No 1 (M. F.) watermarked	10.00
No. 2 (M. F.) watermarked	9.25
Plain (M. F.) unwatermarked	8.60

Glassine (f. o. b. mill)—	per cwt.
Embossed (25 lb. up)	13.75 to 14.25
Bleached (25 lb. up)	12.75 to 13.25
Unbleach. (25 lb. up)	11.50 to 12.00
Greaseproof—	
Bleach. (25 lb. up)	11.00 to 11.50
Unbleach. (25 lb. up)	10.00 to 10.50

News—OPA Ceilings	per ton
Rolls, Standard (Contract)	58.00
Rolls, Lightweight (Cont.)	62.00
Rolls (Spot)	(nominal)
Sheets	66.00

Tissues (Carlots)—	per ream
White, No. 1	1 12½ to 1.20
White, No. 2	.90 to 1.00
Bleached Anti-Tarnish	1.15 to 1.30
Colored	—
Anti-Tarnish Kraft	.70-
Manila	.90 to .95
Napkins, semi-crepe (12¼ lb. to M shts.) per cs.	.60-
Napkins, full crepe and embossed (12¼ lb. to M shts.) per cs.	.60-
Toilet, Bleached (M shts.) per cs.	5.65-
Toilet, Unbleached (M shts.) per cs.	4.25-

Towels—	per case
Bleached	3.20 to 3.75
Unbleached	2.60 to 3.05

Wrappings (Kraft)—	per cwt.
Super-Standard	5.25 to 7.65
No. 1 Wrapping	5.00 to 7.40
Standard Wrapping	4.75 to 7.15
Standard Bag	4 37½-

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

Bleached papers—	per cwt.
M.F. & M.G. Waxing, 20 lb. (Carloads only)	7.25 to 7.60
(10,000 lbs.)	7.50 to 7.75
Drug wrapp. 35 lb.	7.00 to 7.35
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	5.50 to 5.75
No. 1 Butchers	5.75 to 6.00
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	6.25 to 6.50
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	6.00 to 6.25
Steam Finish, 50 lb.	5.00 to 5.25
Water Finish, 40 lb.	5.50 to 5.75

Manilas—	
Envp. Mla., Sub. 16-40 (No. 1)	6.00 to 6.50
Envp. Mla., Sub. 16-28 (No. 2)	5.75 to 6.00
Envp. Mla. (Prices based on large sheets untrim'd reammarked, in bdls.)	
Wrapp. Mla. 35 lb. up—	
No. 1	6.00 to 6.25
No. 2	5.75 to 6.00
M. G. Sulphite and Kraft (other than Waxing)	
Grade A-22 lb.	7.20 to 7.40
Grade B-30 lb.	6.75 to 7.00

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Manufactured from the raw cotton to the finished felt

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TRI-UMPH all cotton, 3 ply 53 oz., widths up to 250".

ZEPHYR all cotton, 3 ply 45 oz., widths up to 196".

ZEPHYR cotton-asbestos 3 ply Face 50% asbestos, back open construction for high porosity. Widths up to 166".

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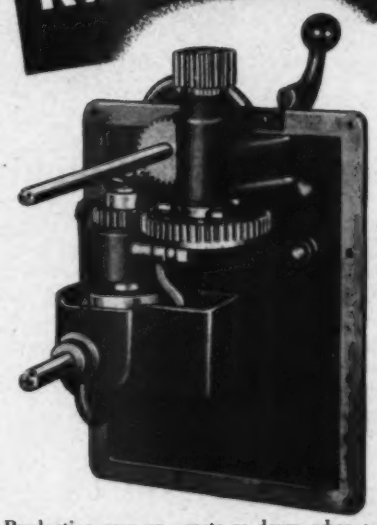


Close-up view of GK Transmission, showing positive jaw-type clutches employed in reversing gear.

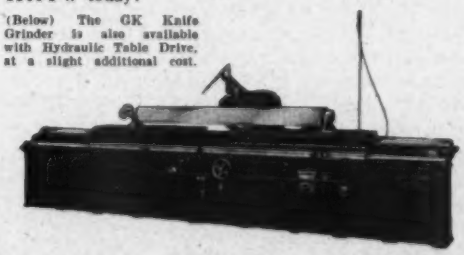
Production goes up—costs go down, when a GK handles your knife and shear blade grinding. *Smooth-reversing* means an edge that's absolutely straight and accurate—the first time! There's no possibility of slippage, when reverse is made by the GK's simple, clutch type transmission, with separate shock absorbing clutch.

Check These Features, Too!

Completely automatic . . . no skilled operater needed. Simple design . . . for minimum maintenance. All feed works grouped in single unit mounted in front . . . for easy, quick inspection. All moving parts run in oil bath.

Operators report savings of 40% and more in knife steel, after installing GK's. Why not write the pioneers of the industry, and see how *your* knife maintenance costs can be cut? No obligation, of course. And get complete details on the New GK, in Bulletin 1144-PW today!

(Below) The GK Knife Grinder is also available with Hydraulic Table Drive, at a slight additional cost.



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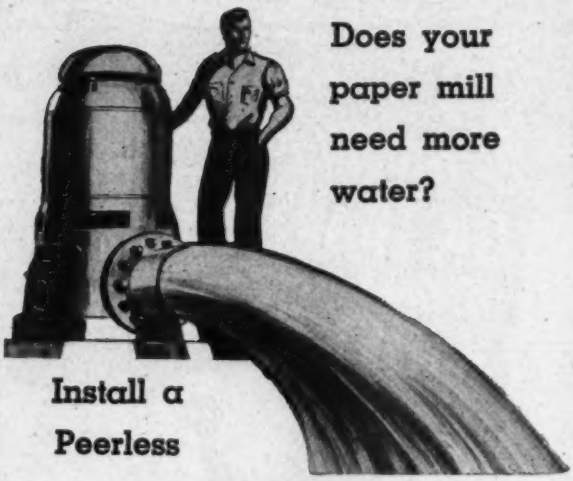

Does your paper mill need more water?

Install a Peerless

Ample water will step up your output

With ability to pump a well of its full capacity, a Peerless Pump will actually produce extra water at peak periods when demands in your paper mill is in excess of normal requirement.

The traditional dependability of Peerless Pumps is another protective factor. The fine workmanship and tested design insure performance beyond compare. Uninterrupted operation can be expected for years to come.

Peerless gives you a choice of three standard power drives for turbine pumps. The **Moturbo** Head provides direct electric motor connection to the pump, with built-in hollow shaft which eliminates the necessity of a flexible coupling. The **Gearturbo** Head provides various gear ratios for connection to a gas engine or belt pulley. The **Bulturbo** Head is for use with horizontal electric motor, steam turbine, gas or diesel engine. Also available with Vee-belt.

Choice of oil or water-lubrication is provided below the surface. Peerless bearing design insures extra long life, freedom from vibration and extreme resistance to sand-cutting. Double shaft bearings and double seals at the bottom of each impeller insure maintenance of original efficiency far beyond normal. Fully enclosed impellers with scientifically-contoured bearings lift maximum volume of water.

HI-LIFT TYPE—10 to 60 g.p.m.
TURBINE TYPE—20 to 30,000 g.p.m.
HYDRO-FOIL (Impeller Type) up to 220,000 g.p.m.

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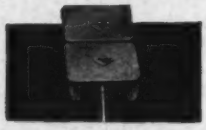

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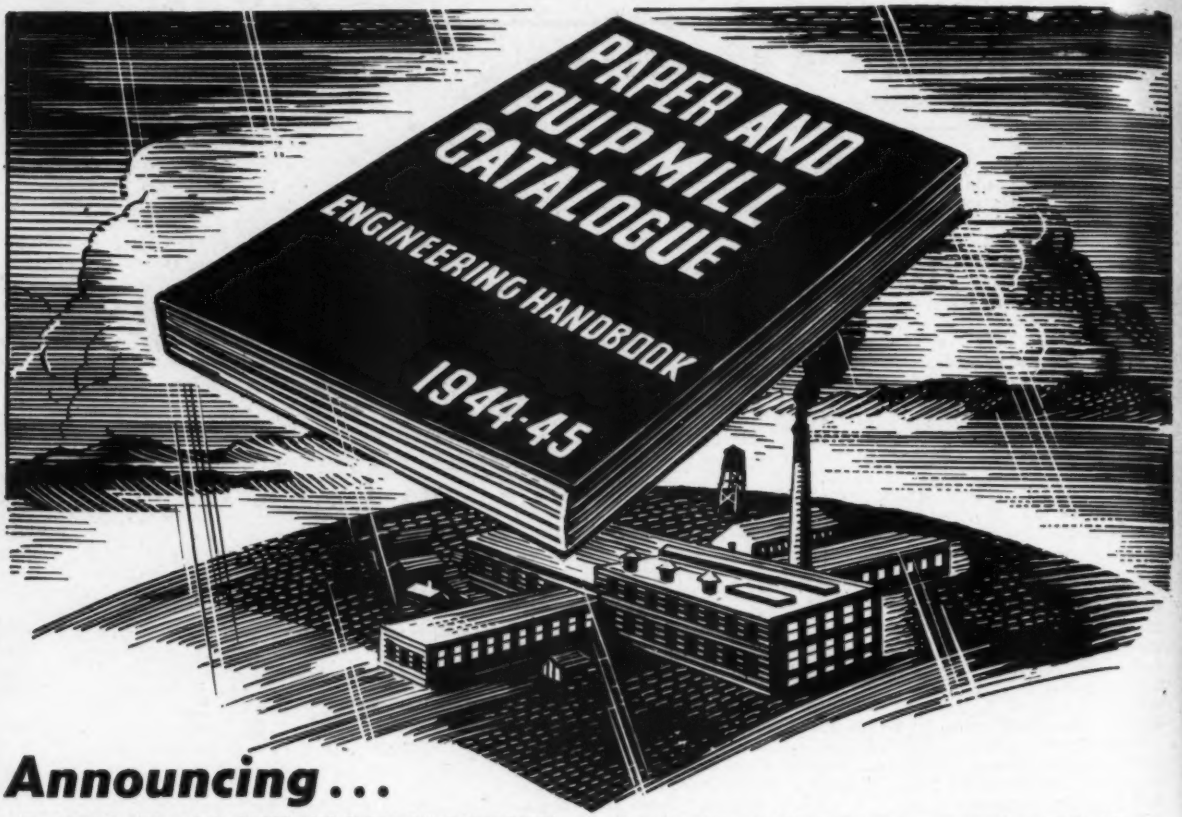

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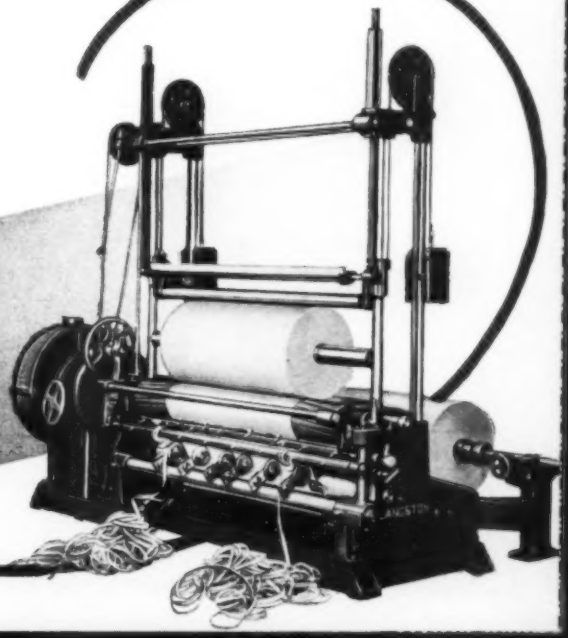

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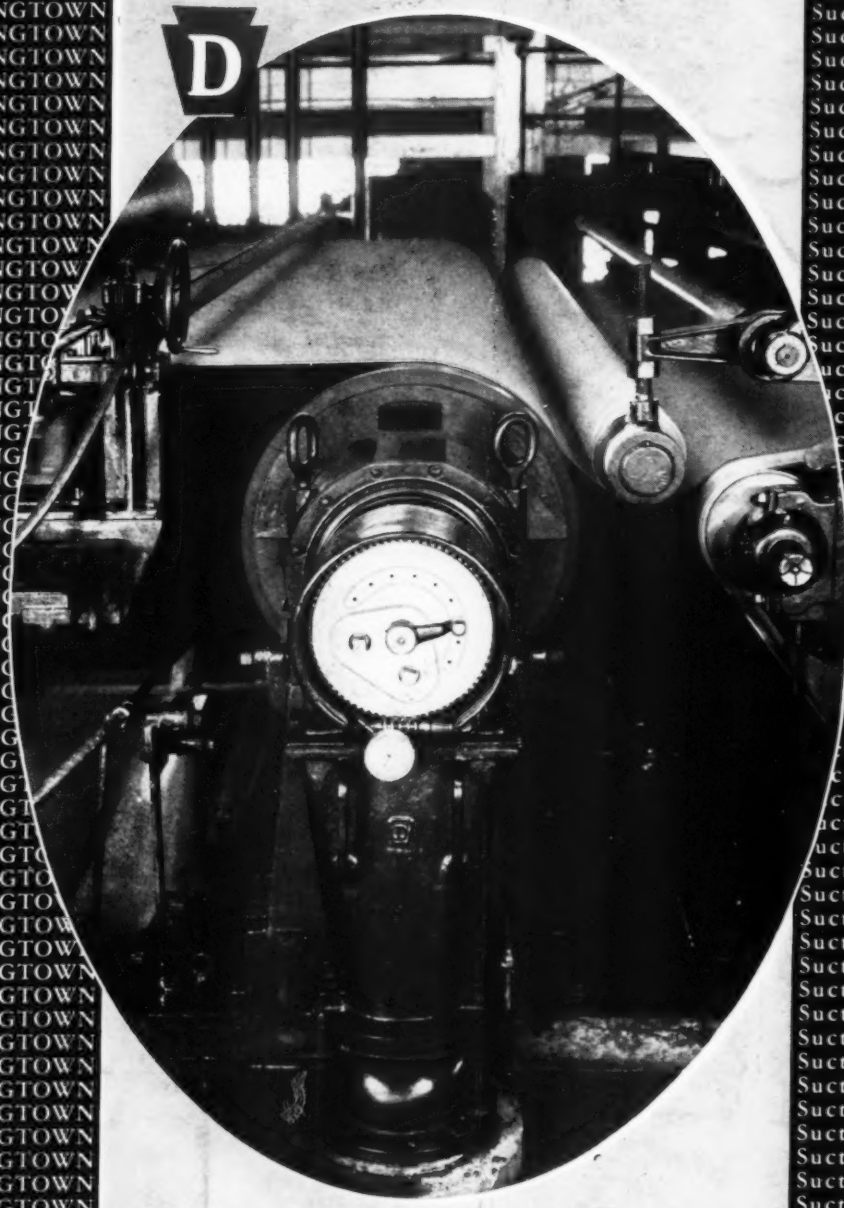

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